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AN OPERATION FOR EXTRA UTERINE FŒTATION BETWEEN THE THIRD AND FOURTH MONTHS OF GESTATION, WITH REMOVAL OF A LIVING FŒTUS AND MUCH TROUBLE FROM HÆMORRHAGE DURING CONVALESCENCE.*

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CASES of extra uterine fœtation vary greatly as regards the position and connections of the amnion and placenta, and in the advanced stages of the abnormality it may be said that no two examples are exactly alike, although several broad groups may be distinguished by the relations of the fœtal and maternal structures to each other. The treatment of the condition by surgical means may be a matter of the greatest ease or of extreme difficulty, and the danger of the operation is much increased in some cases by the fact that the fœtus is alive, whilst in other circumstances the greater risk arises from the fact that the fœtus is dead.

In the case here recorded the operative procedure was quite simple, and there was no hesitation in deciding that the placenta should be left for subsequent treatment or to separate by a natural process; but convalescence extended over a period of five months, whilst anxiety as to the result did not cease until more than two months after the removal of the fœtus, and on several occasions during the first twenty-three days it seemed not unlikely that the

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patient might die of hæmorrhage during the dressing of the wound.

The patient was a Canadian woman, of very good physique, and 23 years of age. She enjoyed perfect health before her marriage on October 9, 1899, and there was no sign of mischief of any kind until the middle of April, 1900. She then, to use her own language, "felt anæmic," and had a "loathing for food." Menstruation up to that time had been quite regular, and lasted six days; a period began on April 20th after the usual interval, and was not remarkable except that it continued for nine days. The first indication of mischief which attracted serious attention occurred on May 12th, when the patient was seized suddenly during the night by a pain in the pelvis, which was sufficiently severe to make her call out. She vomited, and afterwards suffered from nausea. She was then in Paris, and did not consult any medical man, as the pain did not last long, and was insignificant after a few hours. Another menstrual period was expected on May 17th, but the discharge did not begin until May 26th, and it continued irregularly till June 3rd. The patient's condition did not interfere with her arrangements, and she came to London on June 1st. She went by coach to Hampton Court on June 3rd, and in the evening of that day she was again seized with severe pain in the abdomen accompanied by vomiting and nausea. The late Mr. Manley Sims was sent for, and the patient gradually recovered under soothing treatment. The menstrual flow, which had stopped on June 3rd, began again on the 4th, and continued until the 13th; on the 14th the patient was so much better that she went to Ascot, and on the 15th she had a third attack of pain and vomiting. On the 17th a consultation was held, and a diagnosis of extra-uterine fœtation was made. It was decided not to advise surgical interference, but to watch the progress of the condition. The patient was better on June 24th, but on the 28th, after sitting up and walking round her bedroom she had another (the fourth) attack of pain, and on this occasion a slight rise of temperature was noted.

I saw the patient in consultation with Mr. Sims on July 3rd, 1900, nine months after her marriage, and two and a half months after the first menstrual irregularity. There was a mass about the size of a three months pregnant uterus in the pelvis extending more to the right side than to the left. The inferior border of this mass was behind the upper part of the vagina, well below the level of the os uteri and very hard and firm in consistence. The cervix uteri was high up in front, close to the pubic bones, and a little to the left of the middle line. The body of the uterus was attached to the left side of the abnormal mass, and its cavity was three inches in length as

measured with a sound. The patient's skin was sallow and unhealthy, and she stated that her natural complexion was beautifully clear. The breasts did not show any marked evidence of pregnancy. The pulse was good, and there was no rise of temperature.

I agreed with the diagnosis of an extra-uterine fœtation, but I thought it just possible that the abnormal mass might be an inflamed ovarian cystoma with a twisted pedicle. I advised immediate operation as the proper treatment in either case, but this advice was unpalatable, and was declined for a time.

On the morning of July 17th I was asked to see the patient again. There had been one more (the fifth) attack of pain, which, however, was not so severe as the others, probably because the patient was kept quiet in bed. Sir John Williams had seen her with Mr. Sims on the 13th and 16th of July. He agreed with the diagnosis made, and he also advised immediate operative treatment. I found the conditions changed. The abnormal mass was considerably larger and more median in position, and, whereas it had been almost all in the pelvis, it now extended nearly half way to the umbilicus. The hard mass was still felt behind the upper part of the vagina. There was constant pain in the right iliac region, and the parts were all very tender to manipulation. The skin over the right side of the lower abdomen had a glazed appearance which suggested the probability that pus formation had taken place underneath. The temperature was 101·5°, the pulse was beating 90 to the minute, the cheeks showed a hectic flush and the complexion was more sallow than at my first visit. There was frequent vomiting. There had been a slight rise of temperature, and the bowels had been completely blocked for several days, laxatives having been given without effect.

Twenty-four hours were devoted to unsuccessful attempts to induce an action of the bowels by enemata, and I operated on July 18th, 1900, assisted by Dr. Hubert Roberts, Mr. Wm. C. Bull giving the anæthetic, and Sir John Williams and Mr. Manley Sims being present. I carefully cut down in the middle line above the pubes until I exposed a sac containing fluid, the peritoneal cavity not being opened. By means of an aspirating needle inserted into the sac a little over an ounce of opaque matter was withdrawn, and on subsequent examination this was found to be pus. As an attempt to enucleate the sac seemed impracticable, the puncture in its wall was enlarged with a pair of forceps and more pus escaped along with a few ounces of clear fluid. When a finger was introduced through the opening thus made a fœtus was at once detected, and it was easily extracted after a slight further enlargement of the incision. The

appearance of the fœtus indicated that it was still alive, the skin not showing the slightest sign of decomposition or peeling of its surface, and the umbilical cord being quite healthy also. It is therefore certain that the pus removed must have formed outside the amniotic sac. On examining the interior of the cavity from which the fœtus was taken, the placenta was felt to the right, with a large attachment to the side of the pelvis, and it was decided in consultation that no attempt at its immediate removal should be made. The amniotic sac was washed out with iodine and water and packed with iodoform gauze, the end of the divided umbilical cord being kept outside.

There was little shock from the operation. The temperature rose to 100·4° F. the first night, and gradually fell to nearly normal three days later. From this time there was no rise of temperature until after the death of the placenta on August 10th. The pulse was 120 for about six hours after the patient was put to bed, and it also gradually fell to between 90 and 96 beats to the minute. Flatus passed from the rectum within 24 hours of the operation; the bowels gave little trouble and were moved freely on the fourth day by enema. The kidneys acted well.

The plug of gauze was left undisturbed in the wound until the fifth day. On its being removed a collection of about half an ounce of pus was released from near the surface. Next day the packing was again changed. The parts looked quite healthy, and there was very little pus. A very free hæmorrhage occurred from the deeper part of the cavity, but it stopped when the packing was reinserted. The loss of blood was so serious that I asked Mr. Bull to be present at the next dressing in case it should be thought necessary to give an anæsthetic. The bleeding returned for some days whenever the gauze was removed from the deeper part of the wound, and blood was occasionally lost to a serious extent, but replugging the cavity always stopped its flow. On the ninth day after the operation (July 27th) Sir John Williams saw the patient in consultation, and the hæmorrhage on that occasion was much less. Two days later there was no loss of blood, and there was no further loss until August 2nd, when there was again a free hæmorrhage. On August 4th the placenta was seen in the wound. It looked quite healthy, and was evidently alive and well nourished. The cord had sloughed away with the discharges before this date. After a careful examination with the finger an attempt was made to separate the connections of the placenta to the maternal structures where they lay nearest to the surface, and a sinus was at once opened which held the tip of my forefinger easily. This gave rise to profuse bleeding, which, however,

was again arrested by pressure. As the repeated hæmorrhages, although easily checked, were affecting the patient's general condition, and on the last and several other occasions they caused serious loss of blood, no further attempt to separate the parts was made for some days. It seemed that each separation must leave two healthy raw surfaces together, and that this was likely to give rise to more intimate and firm adhesions. Moreover, there was the possibility that a natural separation would take place. Under inactive treatment there was no further hæmorrhage, and, on the other hand, there appeared to be no progress. I thought of having the patient put under an anæsthetic and trying to completely remove the placenta, but after talking over the matter with Sir John Williams another attempt was made on August 10th, without anæsthetic, to separate the placenta with a view to getting at least a portion of it away and breaking it up. A determined effort was made, and a small piece of the placenta was broken off and removed, but it was necessary to desist almost immediately on account of a copious hæmorrhage. At least 30 ounces of bright red blood were lost in a few seconds, and the patient was speedily on the verge of fainting. The wound was at once replugged, whilst Mr. Sims promptly applied all the usual remedies for the general condition. The patient revived after a little time, but she remained extremely pale and collapsed for some days, with a pulse from 100 to 112 beats to the minute, and she only very gradually got back a little colour. After this dressing (on August 10th) there was never more than a drop or two of blood lost in changing the plugs, and it was quite clear that the placenta had been deprived of all vitality. The vaginal discharge, which had begun after the operation and had continued off and on, became more free on August 11th, and ceased altogether a few days later. On the 12th there was much abdominal pain. On the 15th the discharge from the wound was offensive, and from the 15th to the 17th the temperature rose to 101° or 101·2° F. each night. Sir John Williams again saw the patient with Mr. Sims and myself on August 17, and suggested firm plugging round the placenta so as to prise it off from the maternal tissues and prevent reunion of raw surfaces. The placenta, however, remained strongly adherent, and eventually every bit of it had to be peeled off with the finger. It was not possible to do much at a time on account of the pain caused by the necessary manipulation, and the whole of the placenta was not got away until August 26th, 39 days after the operation. From the 15th, when the discharge from the wound became fœtid, until the complete removal of the after-birth, the temperature and pulse were constantly a little

above normal, and the discharge was offensive. The patient was very weak, and she sweated profusely. After August 26th the temperature and pulse became normal, and the general condition steadily improved. All the functions were properly performed, laxatives and enemata being given when necessary. The discharge ceased to be offensive, and the wound contracted. After the last of the placenta was removed the hard mass which had been behind the upper part of the vagina was no longer to be felt there, but a probe passed through the wound could be easily defined by the finger through the posterior vaginal wall, and could be pushed as low as the level of the os uteri. The placenta had been adherent over the right side of the pelvis nearly as high as the true brim, over part of the left side of the sacrum and also over part of the left side of the floor of the pelvis. The pieces collected were preserved in spirit, and when thoroughly shrunk they occupied a space equal to that of about two fluid ounces. I am unable to state the position of the right ovary and tube. They must have been pushed aside, and only gradually returned to their proper place as the parts contracted. The ovary was not discovered until September 13th.

On August 26th, when I removed the last portion of the placenta, I put a large drainage tube in the sac and this was gradually reduced in size and length, the sac being washed out daily with creolin or corrosive sublimate solution. There seemed to be no likelihood of further trouble and I went out of town on August 31st, the case being left in the care of Mr. Manley Sims, who had helped me up to this time, and later his partner Dr. Roxburgh Fuller took charge. All went well until the 12th of September. On that date the patient complained of indigestion, abdominal pain and headache, and she vomited frequently during the afternoon. A restless night was passed and the vomiting continued. There was little distension of the abdomen, but very little flatus escaped from the rectum. A free evacuation of the bowels had been induced by enema on September 11th, and after that neither laxatives nor enemata gave relief. The temperature was normal; the pulse was 96. I saw the patient on the 13th. The sickness was then less, but at night the temperature was 101·2 and the pulse was 108. By vaginal examination a tender body was discovered on the right side of the uterus in front of the sinus. I thought this was the ovary and that the unfavourable conditions were probably due to the oncoming of a menstrual period, there having been no vaginal discharge for about a month. The patient complained of pain in the back, in both groins and down the thighs. The abdomen was not much distended, but it was fuller

than normal in its lower part. The slight distension was peculiarly placed, its upper limit forming approximately a section of a circle the centre of which was the mouth of the sinus. The opening of the wound looked healthy. Feeding by the mouth had been stopped because of the vomiting, and rectal feeding was substituted. A grain of calomel given next morning with an enema in the afternoon induced a free action of the bowels. On this day (September 14th) the temperature rose to 105 and the pulse to 116. There was much pain in the pelvis and a very slight menstrual discharge came on. Opium was administered and a large poultice was placed over the abdomen.

The patient was better on the morning of the 15th with more vaginal discharge, but at night she was very ill and the temperature rose to 104°. There was now more discharge from the wound, and the tender body which I thought was the right ovary was larger and more diffuse. On September 16th there was a distinct increase in discharge from the wound and the mass in the pelvis was smaller and again seemed to me like an ovary. The discharge from the wound gradually diminished; after a few days the temperature became normal, the bowels responded to laxatives and enemata, and all pain ceased. The period stopped on September 18th, having lasted four days. There was some offensive discharge from the wound, and the temperature rose in the evening until September 22nd, the abdomen remaining distended round the sinus. A probe in the wound could still be felt behind the vagina as low as the os uteri. Everything went well after this except that the discharge was occasionally offensive, and the sinus showed no tendency to shorten. The right ovary and afterwards both ovaries were easily felt. About this time large casts of the bowel were frequently passed at stool. One which was secured on September 28th was submitted to Mr. Targett, and he kindly reported that it was a "typical mucous cast from the large intestine and does not contain any portion of the mucous membrane. It is evidently due to a chronic catarrh of the colon associated with the suppurating sac which must be adherent to the sigmoid, etc." Mr. Targett stated that he had seen several cases of this catarrh in connection with pelvic suppuration and others have come under my observation. All the conditions gradually improved after this time. On November 8th the patient went to Brighton and was under the care of Dr. Uhthoff. She returned towards the end of the month, still with a sinus leading down to the back of the cervix uteri. She sailed for New York after a few days, arriving on December 8th, 1900, and the voyage seems to have done much good. Dr. Bull, of New York,

found the wound healing fast, and within a fortnight it had finally closed. Subsequent reports were invariably satisfactory and after a few months the patient had made a complete recovery in every respect. I saw her on June 13th, 1903, and she told me that her health was perfect.

It is not possible to speak positively of the relations of the parts in this case, but it seems probable that the Fallopian tube burst into the cellular tissue between the layers of the broad ligament, and that the placenta became attached to the wall of the pelvis in such a position that it did not involve any portion of the intestine. The peritoneum was gradually raised out of the pelvis by the enlarging gestation sac, and on five occasions there were attacks of pain and intestinal difficulties induced by tearing of the connective tissue, these atacks being generally determined by some exertion. Shortly before the operation suppuration occurred, probably from infection passing through a portion of the intestinal wall damaged by traction or compression. Fortunately the abscess developed in the line of the incision necessary to expose the fœtal sac, and the operation was performed in time to prevent serious trouble arising from the formation of pus. There was no evidence that hæmorrhage into the tissues had occurred at any time. The pain and rise of temperature in the middle of September were due partly to the advent of the menstrual period, partly to some bowel difficulty. Probably there were coils of intestine adherent to the sac of the gestation where the suppuration occurred before the operation. In this case there was not at any time a deciduous membrane recognised in the vaginal discharges. The fœtus was not quite symmetrical in the legs and head, as is not unusual when development is extra-uterine.

Hæmorrhage from the placental site is one of the most serious complications met with when an operation is undertaken for an extra-uterine fœtation after a well defined placenta has formed and when the child is still living. Dr. Champneys, in 1887 (*Trans Obst. Soc.*, Vol. xxix., p. 456), collected 18 such cases which were operated on and sixteen of the patients died. To avoid hæmorrhage in his own case Dr. Champneys left the placenta (1 c.) undisturbed, and the external wound healed completely. All went well until the patient was permitted to move about on the 32nd day after the operation. From that time there were evidences of septic infection and the patient died on the 80th day. Aust Lawrence recorded a case (*Ib.*, Vol. xxx., p. 122) in which the fœtus was aged four months, the placenta was not removed at the operation and it did not come away at any time. In a case operated on by Dr. J. W. Taylor the wound healed

over the placenta and union was firm after twelve days, but signs of septic mischief developed and the wound was re-opened for the removal of the placenta which had become putrid. The patient made a good recovery.

The dangers of hæmorrhage may sometimes be very slight. In a few cases a large, well developed placenta has been found so attached to the tube or uterus or omentum that the operator was able to secure all its blood supply by ligatures with little or no loss of blood (*Trans. Obst. Soc.*, J. W. Taylor, xxix., p. 178. J. Bland-Sutton, xl., p. 308 and xliv., p. 316). Under such conditions when the child is alive there may be no more risk than in the removal of an ovarian tumour. In the great majority of cases in which an operation is performed at an early period of gestation it is possible to prevent hæmorrhage after the operation by tying and dividing the broad ligaments. In these early cases much blood may flow when adhesions are separated, but most of it comes from the Fallopian tube, and very little from the parts to which the fœtation has become adherent. Hence when the vessels in the broad ligament are secured there is no further trouble from hæmorrhage. When the rupture of the Fallopian tube occurs in that part which is within the uterine wall, there may be very great difficulty, and it might even be necessary to remove the uterus, but Bland-Sutton (*Trans. Obst. Soc.*, Vol. xxxvii., p. 286) in one case of this kind successfully secured the parts by means of two double trans-fixing ligatures.

When, as in my case, the placenta has escaped from the tube and has spread itself over adjacent tissues in such a position that there is no possibility of tying the vessels supplying it with blood, the only modes of procedure are to peel off the placenta or leave it to die and come away spontaneously. In normal conditions the placenta is separated and is thrown off from the interior of the uterus when the child is delivered, but part of it may remain adherent. If a dead piece of the placenta or of the membranes continues adherent and becomes putrid it usually gives rise to septic absorption. If a living piece of placenta remains attached, and it would appear that it may continue thus indefinitely, it causes severe hæmorrhages at and between the periods and any attempt to separate it causes very free bleeding.

A placenta developed outside the uterus may remain adherent in the same way as a placenta in utero, whether it is dead or alive, and there is evidence which seems to show that the living placenta of an extra-uterine fœtation may grow after the death of the fœtus (Lawson Tait and Christopher Martin and Hart and Barber, quoted by Tait and

Martin, *Trans. Obst. Soc.*, Vol. xxxiv., p. 206 and 210). A dead placenta may usually be peeled off with little loss of blood, but sometimes the removal of a dead placenta induces very dangerous bleeding, as in Dr. Taylor's case (*Trans. Obst. Soc.*, xxxiii., p. 115). Dr. Champneys, quoting Litzman, said that furious bleeding had occurred from the placental site four months after the death of the child (*Trans. Obst. Soc.*, Vol. xxx., p. 486). It was not stated whether the placenta in this case was dead, or adherent and alive. If the placenta is living the hæmorrhage on separating it is usually very profuse. One of the chief causes of the natural separation of the placenta from the inside of the womb, namely, the contraction of the muscular fibres of the uterine wall, is absent when the placenta is not in the uterus. The importance of this is well shown by a case recorded by Dr. Galabin (*Trans. Obst. Soc.*, Vol. xliv., p. 228), in which the placenta of an extra-uterine fœtation was attached to a uterus which contained a child. Abortion took place three days after the operation, the extra-uterine placenta was separated from the contracting uterus, and death from hæmorrhage took place. The contraction of the wall of the uterus is also a potent agent in arresting hæmorrhage. Hence the conditions when the gestation is outside the womb favour a continuous adhesion of the placenta, and also tend to permit a free hæmorrhage when the parts are separated. Moreover, the vessels supplying blood to an extra-uterine placenta are always large, and this also facilitates hæmorrhage.

For these reasons it is generally accepted that, if the attachments of the placenta cannot be cut through and ligatured, the proper course in operating is to leave the after-birth to die and be thrown off by the tissues, the wound being kept open to permit of its escape. (Sir John Williams, *Trans. Obst. Soc.*, Vol. xxix., p. 482). Hæmorrhage, whether due to deliberate attempts to remove the placenta, or arising from accidental causes, has sometimes been arrested by the application of a perchloride of iron solution with pressure (Lawson Tait, *Trans. Obst. Soc.*, Vol. xxix., p. 505. J. W. Taylor, l.c., Vol. xxxiii., p. 215. Wm. Duncan, Vol. xxxv., p 215). In a very remarkable case, in which Mr. Marmaduke Shield found that a large slough of the whole thickness of the abdominal wall had formed, free hæmorrhage was controlled by a continuous stream of hot water, and the patient recovered (*Trans. Obst. Soc.*, Vol. xxxiii., p. 128). Mr. Sidney Turner used hot water successfully in the same way (l.c., Vol. xxxv., p. 178). Ligatures have been used when an attempt to peel off the placenta has induced profuse bleeding (W. S. A. Griffith, *Trans. Obst. Soc.*, Vol. xxxiii., p. 126. Wm. Duncan, Vol. xxxvi., p. 146. Arch. Donald,

Vol. xli., p. 7). Pressure has also been used very frequently, and these methods have, of course, been combined (C. Malins, *Trans. Obst. Soc.*, xxxiv., p. 181. Peter Horocks, l.c., Vol. xxxv., p. 188. A. L. Galabin, l.c., Vol. xxxviii., p. 81).

In the case I have related the duration of life of the placenta after the operation was unusually prolonged, and it appeared as if it would continue adherent and alive indefinitely until I attempted to break it up on the 23rd day after the operation. The manipulation to which it was subjected on that occasion, and perhaps also the firm pressure applied, caused the death of the placenta, and then hæmorrhage gave no trouble, although the placenta remained so adherent that it was necessary to peel it off bit by bit. Probably after I thought it was all removed some small pieces remained, and only came away on being separated very slowly by the surrounding granulations. When separation was complete the wound rapidly healed.

A study of published facts, of my own cases and of others which I have seen leads me to the conclusion that when an extra-uterine fœtation is diagnosed, if it is believed that the fœtus is living, an operation should always be recommended without unnecessary delay. There are a few instances in which the fœtus dies without giving much trouble, shrivels up and becomes encapsuled, but in the great majority of causes in which the fœtus lives beyond the earlier weeks of gestation, and is not removed by operation, septic mischief and death or a very prolonged and dangerous illness must be expected. Delay in operating offers an opportunity for the development of such complications without in any way rendering interference more easy or more safe. The cases in which the removal of the placenta is most dangerous on account of its attachments to hollow viscera, are the cases in which the greatest danger will arise when the placenta becomes putrid. The risks of an operation should therefore be undertaken as soon as arrangements can be made. If the child is alive I do not think there are any circumstances in which the conditions, whatever they may be, are likely to change so as to become less serious or more easy to deal with.

The operation in the early stages of gestation is a very satisfactory one. It so happens that I have never been asked to operate on a patient who was bleeding to a serious extent from a rupture of the Fallopian tube, and I have been lucky in never being asked to operate on a case in which the fœtus was putrid. Hence with the exception of the case published in the *Trans. Obst. Soc.* (Vol. xli., p. 223) in which the bones of a fœtus had been retained 7 years and I had to disturb

them in performing an ovariotomy, the bowel being injured in doing so, I have not lost a case from this operation. But this does not show fully how very satisfactory the operation is. I have formed a very strong opinion that women who develop extra-uterine fœtations are likely to stand operations unusually well. It has been suggested to me that this is due to their being pregnant. Whatever the cause the fact that these patients recover in an extraordinary way from the most severe operation has impressed me on many occasions.

It is likely that as the symptoms become better understood, cases of extra-uterine fœtation will be generally operated on when the sac is small and before any serious loss of blood takes place, for there is, as a rule, some warning symptom to direct attention to the parts before a fatal hæmorrhage occurs. It is to be feared, however, that there will always be a number of cases in the future as in the past in which no medical man will be called in until serious complications arise. Moreover the patient and her friends may refuse to permit an operation as long as she appears to be, and perhaps feels, quite well. Such considerations should be over-ruled as often as possible, for although we cannot always estimate exactly the complication that may have to be encountered, yet it cannot be too emphatically stated that any unreasonable delay must tend to make operative interference more dangerous in cases of extra-uterine fœtation whenever the child is living.

If the embryo is believed to be dead and the gestation has only developed for a few weeks, a cure may take place without any resort to operative treatment, but even under these circumstances the patient should be very carefully watched, and in many cases, even when the child dies at a very early stage of gestation and when there are no urgent symptoms, it may be safer treatment to operate and remove the Fallopian tube and the blood clot which is so often found in the peritoneal cavity in these cases. It should not be forgotten that, although the embryo may die, the placenta may adhere and live.

There is one other point in this case to which I wish to refer, namely, the fact that the extra-uterine gestation occurred in a healthy woman soon after marriage. It has frequently been said that an extra-uterine gestation usually occurs after a long period of sterility in a parous woman. In the cases I have abstracted from the Society's transactions in the accompanying table there are 15 in which the first gestation was extra-uterine, and two in which this is implied but not definitely stated. I have in my own practice had four cases in which an extra-uterine fœtation occurred in young women soon after they married, or had an opportunity of becoming

pregnant. It is therefore certain that the fact of a patient being healthy and recently married must not be considered to indicate that the probabilities are against the correctness of a diagnosis of extra-uterine fœtation. In all my patients in which this abnormality occurred soon after marriage the history suggested the diagnosis before the patients were examined, because irregularity of menstruation was so markedly in contrast with the regular menstruation previously existing. The change was very definite in the case I have related above.

When a patient has suffered for many years from irregularity of menstruation the difficulty of diagnosis is much increased, for an important part of the history is then absent. It must not be forgotten that there are cases in which there is complete amenorrhœa during the whole period of an extra-uterine fœtation. (Herbert Williams, *Obst. Trans.*, Vol. xliv., p. 225).

A table containing a short account of all the cases published in the Obstetrical Society's *Transactions* from 1887 to 1902 was submitted to the notice of the Fellows of the Society when this paper was read.

CASE OF RUPTURED TUBAL GESTATION ASSOCIATED WITH TWIN-PREGNANCY IN UTERUS.

By G. BALFOUR MARSHALL, M.D., F.F.P.S.G., *Gynæcologist, Glasgow Royal Infirmary; Lecturer on Obstetrics and Gynæcology, Western Medical School, Glasgow.*

MRS. X., aged 30, was admitted to the Royal Infirmary, Glasgow, on 27th July, 1900, having been sent by train from Ardrossan by her medical attendant, who certified her as a case of ruptured tubal gestation.

History of case. She had had four children, the last twenty months previously, all the labours being easy and the recovery good. Her last menstrual period was in the middle of April, and she stated she had never felt well since, suffering from pain in the lower abdomen, slight vaginal discharge, and occasionally faint turns. She considered herself three months pregnant at date of admission. A severe attack of pain—the first—occurred about the middle of May in the lower abdomen. It was so severe as to cause her to faint, but she did not take to bed.

On 23rd July she had another very severe attack of pain—the second—and noticed the abdomen swollen. Her condition did not improve during the succeeding four days, so her medical adviser sent her to hospital, where she was admitted at 9 p.m. on 27th July. The patient was constipated, and next forenoon, the 28th, the nurse gave an enema, which did not empty the bowel. This was followed by severe pain—the third attack—in the left iliac region, and the patient collapsed with pallor, cold sweat, vomiting, and great thirst. The pulse at midday was 142, respirations 30, temperature 98. I was telephoned for, and arrived at hospital about 1 p.m. The patient now showed all the signs of great loss of blood. There was a feeling of restlessness and great anxiety; she complained much of thirst and coldness, and her respiration (30 per minute) was sighing in character. There was great pallor, the mucous surfaces were colourless, the temperature was subnormal (97·4°), the radial pulse very rapid, about 150, and so feeble that it was difficult to count.

Examination. The abdomen was much distended and rounded. Both flanks were dull to percussion from pelvis to costal margin as far forward as a vertical line from the middle of Poupart's ligament. The whole lower abdomen was also dull as high as the lower umbilical

Left tubal gestation and twin uterine pregnancy. Rupture of tubo-peritoneal sac (secondary abdominal). Uterus is opened posteriorly.

region. Palpation showed an ovoid tumour, which proved to be the uterus extending upwards to about 3 inches below the umbilicus, and deviated to the right. Bimanually, the uterus was felt enlarged to the size of a four and a half months' pregnancy. To the left side lay a large fist-sized, partly cystic, partly boggy fixed tumour, very tender to touch, which lay deep in the pelvis, the lower rounded border being about the level of the cervix, the upper border reaching above the pelvic brim. The pouch of Douglas was free.

Diagnosis. Uterine pregnancy and ruptured ectopic gestation, left side, with copious intra-abdominal hæmorrhage. I had no hesitation in deciding to operate at once, although the patient was very collapsed, indeed, I feared she would die on the table. The patient was hastily prepared, one-thirtieth of a grain of strychnine being at the same time injected hypodermically.

Operation. As soon as the peritoneum was opened, blood welled forth. The abdomen was found full of fluid blood, which was removed. The pregnant uterus was deviated to the right, and on passing the hand into the left side of the pelvis a large ruptured sac was felt, from which a well developed three months' fœtus was removed (see illustration). To control the hæmorrhage, which was still active, the ovarian artery was ligated close to the uterus and at the infundibulo-pelvic ligament. The upper part of the gestation sac was formed by dense broad adhesions firmly matting the small intestines together. The small placenta was adherent to the posterior aspect of the sac, the upper surface of the sigmoid, and the meso-sigmoid. It was removed without injury to the bowel. The cavity of the sac extended deeply in the pelvis to the level of the cervix, and there was extensive copious oozing of blood, especially from its lower half. As the hæmorrhage could not be controlled without ligating both ovarian and both uterine arteries, and as the patient could not possibly stand a certain abortion with its further loss of blood, the uterus was removed, Doyen's clamps being used, instead of ligatures, to save time. The oozing from the sac was now slight, and to control this the cavity was firmly plugged with sterilised iodoform gauze, the ends being brought into the vagina. The abdomen was closed with silkworm-gut sutures.

Immediately after operation a saline and brandy enema was given, and a pint of saline solution infused. The hypodermic of strychnine (one-thirtieth of a grain) was also repeated. Saline infusions and strychnine were repeated, when indicated, during the following evening and night. The pulse greatly improved, and by midnight was down to 124.

Next day, the 29th, the patient felt better, though very thirsty, and, fortunately, there had been no sickness. The pulse was stronger, 128 per minute, and the temperature 100°F.

On the morning of the 30th the clamps and gauze packing were removed. There had been no hæmorrhage. The pulse remained fuller and better. There were strong hopes of recovery, but at 7 p.m. the patient became collapsed, she complained of colicky pains in the abdomen, and the pulse became feeble, rising to 142. Saline infusions and strychnine injections were given at intervals during the night, but the patient gradually sank, and died at 5-50 a.m., the pulse before death being 160.

A *post-mortem* examination was made, and the following report given:—The wound area was clean. There was no signs of peritonitis nor hæmorrhage. Each pleural cavity contained 12oz. of blood-stained fluid. The heart was almost bloodless, and all the organs were extremely anæmic. Death was due to excessive loss of blood.

The uterus, when opened, revealed a twin pregnancy, each fœtus lying in the transverse, one above the other (see illustration). Each fœtus corresponded in size to a three or three and a half months' pregnancy, and this is probably correct, calculating from the last menstrual period in the middle of April.

The anatomical relationship of the pelvic structures was so distorted that it was at first difficult to be certain whether it was a rupture of a secondary abdominal, *i.e.*, tubo-peritoneal sac, or of a sub-peritoneal pelvic gestation. I am inclined to think the former, owing to the fact that the placenta was adherent to the sigmoid, and that the upper part of the sac was formed by dense peritonitic adhesions, and roofed in by adherent small intestines. The primary rupture of the pregnant left tube probably occurred about the fourth or fifth week, in the middle of May, as the patient at that time had a severe attack of pain in the lower abdomen, and the seat of rupture was probably on the posterior aspect of the tube, the commonest site. Some nine weeks later, on 23rd July, she had a second attack of abdominal pain, which continued, so that her medical attendant sent her to Glasgow as a case of ruptured tubal gestation. I am a little doubtful if a rupture really occurred then, but if so, the quantity of blood effused into the abdomen must have been small. There is no doubt, however, that the enema given on the 28th caused the final rupture, and this is readily understood from the fact that the sigmoid formed part of the sac wall, and had the placenta adherent to it.

The value of prompt operation is demonstrated by this case, and I think this patient might have been saved had I seen her two hours earlier.

CASE OF COMPLETE INERTIA UTERI DURING FIRST STAGE OF LABOUR: ARTIFICIAL DELIVERY: DEATH FROM PULMONARY EMBOLISM.

By G. BALFOUR MARSHALL, M.D., F.F.P.S.G., *Gynæcologist, Glasgow Royal Infirmary; Lecturer on Obstetrics and Gynæcology, Western Medical School, Glasgow.*

THERE are several points of interest in this case which merits its being recorded. Amongst these may be mentioned:—(1) The rarity of complete inertia uteri so early in the first stage of labour in the absence of obstruction; (2) the collapse one hour after delivery, and death five and a half hours later; (3) the effect on the child by forceps pressure even in an easy extraction.

The patient first came under my care in 1896. She was then aged 32, had been six years married, and was the mother of two children. In July, 1896, I removed the right annexa for an unruptured tubal gestation about the fifth week (see *Glasgow Obst. and Gyn. Soc. Trans.*, vol. i., p. 27). Since that operation, I have attended her during three confinements. She was delivered:—

First, of a female[1] child, born 7th July, 1898, *i.e.*, eighteen months after removal of the tubal gestation. The labour was easy and required no assistance, yet the child was born dead, having succumbed during the second stage from no evident cause. The placenta was partially adherent, necessitating manual separation.

Second, of a male[1] child, born 1st March, 1899. The second stage was prolonged owing to inertia, delivery being effected with forceps. Both mother and child did well.

Third, of a female[1] child, born 20th September, 1900. It is this last labour which forms the subject of this paper.

During the latter half of her last pregnancy, the patient, naturally a neurotic woman, was more nervous than usual, and frequently expressed the dread that she would not survive her approaching confinement. It is a common enough dread with pregnant women, especially primiparæ, but in this instance it proved only too true.

The first summons came at 6-30 a.m. on 19th September, 1900,

1. A belief has been held that one ovary gives off male ova, the other female, but such a view is proved to be fallacious in a case like this, where both sexes were developed from ova produced by the left ovary.

slight labour pains having commenced a few hours previously. When seen an hour later the os was dilated to about the size of a two-shilling piece, and the child presented in the first or L.O.A. position. At 1 p.m. I again visited the patient, and found that the membranes had ruptured at midday, a considerable quantity of liquor amnii escaping. The os was the size of a crown piece, and the pains, which from the beginning of labour had been very feeble, had ceased coincidently with the escape of the forewaters. From that time onward, there was complete inertia of the uterus. Frequent visits were made during the next twenty-four hours, but no progress was noted in the labour. The patient was, however, quite comfortable, although anxious at the continued absence of her pains, which frequent hot douching failed to stimulate. At 2 p.m. on the 20th—*i.e.*, twenty-six hours after rupture of the membranes—it was considered expedient, for the child's sake, to proceed to artificial dilatation and delivery. I was guided in this decision by the state of the fœtal heart, which had been carefully auscultated at each visit. By a succession of Barnes' rubber bags, followed by de Ribes' bag, the cervix was without difficulty dilated, the time occupied being nearly one hour. The use of the bags did not, however, stimulate the uterus to retract, as I have found to be usually the case. At 3 p.m. the forceps were applied, and delivery effected slowly to avoid sudden emptying of the uterus with its consequent danger of post-partum hæmorrhage. Chloroform was avoided for the same risk of hæmorrhage, but the patient at no time complained, and stood the ordeal of her delivery very bravely. As the fœtal head was coming over the perineum, 20 minims of P.D. and Co.'s aseptic ergot were injected into the right hip, and with such good results that the uterus retracted well after the child was born. The child, being apnœic, required artificial respiration for twenty minutes before it breathed properly. After attending to the child, I returned to the patient, expressed the placenta half an hour after the birth of the child, and finished by giving an intra-uterine douche of 1 per cent. lysol solution at 115°F. The uterus was well retracted, perfectly hard, and I particularly noted that there was no hæmorrhage. The patient appeared much exhausted, but not more so than would have been expected after so much interference. I was preparing to leave the house half an hour later, having again noted that the uterus was well retracted and hæmorrhage absent, when the patient suddenly complained of a choking sensation, a feeling of weight or compression in the cardiac region, and a great fear of impending death. The face became pale and covered with a cold sweat, the lips bluish, the extremities cold.

Respiration was rapid, and the radial pulse was small, feeble and rapid—about 140 per minute. The treatment adopted was that of packing with hot bottles, stimulation by alcohol, small quantities of hot milk and meat juice, and hypodermics of strychnine (gr. $^1/_{60}$) and digitalin (gr. $^1/_{100}$), repeated every hour. No improvement, however, took place, and the patient, passing into a semi-conscious state, died about six and a half hours after delivery, the duration of symptoms being about five and a half hours. The uterus remained well retracted until the end, and there was no hæmorrhage.

As regards the child, there was no cranial depression nor visible injury beyond a slight bruising of the scalp from one blade of the forceps. There must, however, have been an intracranial hæmorrhage, as it had frequent convulsive seizures during the first forty-eight hours, with twitching of the facial muscles and cyanosis. These seizures became less frequent and severe, but did not quite disappear till after the sixth day. The child completely recovered, remaining healthy and well developed when last seen some eighteen months later.

The record of this case opens up such points for discussion as (1) the cause of inertia uteri and its treatment; (2) the cause of sudden or rapid death at or after labour and its treatment; (3) the risk to the child from compression of its head by forceps, even in cases not presenting great difficulty in extraction.

In discussing these points, I shall limit my remarks in so far as they have a bearing on this special case.

1. *The cause of the inertia uteri and its treatment.* This patient was muscularly strong, well nourished, and in good health, so that there was no condition weakening the whole organism. Exhaustion of the uterine muscle from rapidly recurring pregnancies can be excluded; she had, however, inertia during the second stage in her previous labour eighteen months before. The pelvis was roomy, there was no obstruction to labour in the passages, the cervix being soft and easily dilated, so exhaustion from obstruction was not a cause. Uterine fatigue, a common cause and often seen in primiparæ, was not a factor, as the pains had been feeble from the very onset of labour. Deficiency of liquor amnii, so-called dry labour, or early escape of this fluid from premature rupture of the membranes, permits the uterus to retract upon the fœtus, and may thus render it incapable of exerting its normal force. In this case, the waters did drain away after a premature rupture of the membranes, and the pains, feeble as they were, ceased altogether. I confess it is not very

clear to me why she had inertia, nor why the membranes should have ruptured so early.

Regarding the treatment, I did not consider it necessary to interfere, even although the membranes were ruptured, so long as there were no indications either on the part of the mother or the child. Hot douching at intervals of three or four hours was resorted to, but had no effect, although I have seen it do good. I regret I did not try quinine. I have used it in several cases, giving four to five grain doses, repeated every hour till sixteen to twenty grains have been taken, but stopping sooner if indicated. It is, however, a most uncertain drug, it fails in many cases, and there is always the alleged danger of its favouring or causing post-partum hæmorrhage, although I have never seen such occurring after its use.

Ergot is a certain drug for stimulating the uterus to retract, but it should never on any account be used before the child is born. I would not have mentioned ergot, were it not for the fact that it is still used by some practitioners for inertia during the first and second stages of labour. It is not, therefore, out of place to refer to some of its dangers. (*a*) The circular fibres about the cervix may retract, and labour thus be retarded instead of hastened. (*b*) Should there be any obstruction, even though slight, to the passage of the fœtus, the risk of rupture of the uterus is very great. (*c*) The action of ergot cannot be regulated, and the uterine retractions induced by it are likely to become tetanic, thus leading to death of the fœtus from asphyxia.

The insertion of Barnes' bags is useful, as they not only aid dilatation of the cervix, but stimulate the uterus to retract at the same time. As already stated, they failed in this case to excite uterine contractions.

2. *Cause of death after labour.* In this case the diagnosis of cause of death lies between shock, rupture of uterus and pulmonary embolism. I though of the possibility of rupture of the uterus, but this may be excluded, as, in the absence of uterine retractions, it could only have been caused by violence. There was, however, no special difficulty either in dilating the cervix or delivery by forceps. I noticed no tear when giving an intra-uterine douch; there was no hæmorrhage, and the symptoms of shock would have appeared earlier. The symptoms were suggestive of shock such as may follow severe exhaustion after labour, and, as already mentioned, the patient was much exhausted, but I consider the symptoms would have appeared earlier. There was not the great air hunger one

associates with rapidly fatal cases of pulmonary embolism, but, on the other hand, a diagnosis of this being the cause of death is favoured by the choking sensation, dyspnœa, feeling of præcordial oppression, great fear of impending death and cyanosis of lips. A *post-mortem* examination was refused. Little can be done for such a grave accident beyond absolute rest, and the free use of stimulants. The patient seemed to find greatest ease when lying on her right side, and this position she maintained till she died.

ON THE ORIGIN FROM ACCESSORY FALLOPIAN TUBES OF CYSTS OF THE BROAD LIGAMENT SITUATED ABOVE THE FALLOPIAN TUBE.

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I. *Theories of the origin of broad ligament cysts.*

Since Bantock's work on the subject in 1873, it has been, up to a recent period, a generally accepted belief among gynæcologists that all cysts developed between the layers of the broad ligament, whether above or below the tube, are of parovarian origin.

Recently Prof. Kossmann, of Berlin, has ably maintained, but has not demonstrated, that broad ligament cysts in general are of Müllerian origin. Kossmann* has thus summarised his latest views on the subject:—"Further it should not escape notice, that the large cysts of the broad ligament, so far as they cannot be traced back to the ovary, have been viewed almost entirely as parovarian cysts, that is as cystic dilatations of the Wolffian diverticula (Schläuche) or of the Wolffian duct. On account of the histological structure of these cysts † I cannot share the general view, rather do I trace these cysts, which I shall speak of further, immediately to accessory Müllerian ducts. . . . There can be no doubt that accessory Müllerian ducts occasionally give rise to cysts. We see frequently in the neighbourhood of the tubes, on the broad ligament or on the tube itself, little appendages with a ring of fimbriæ, which possess a cystically dilated lumen. The lumen communicates neither with the peritoneum nor with the main tube. We find in the neighbourhood structures which are identical in histological structure with these appendages, but possessing no ring of fimbriæ. Since now in these cases there can be hardly a doubt that we are dealing with imperfect accessory tubes, we come close to the inference (*so liegt es ungemein nahe*) that the little cysts which lie between the folds of the broad ligament, and whose walls and contents are identical with those above described, are also to be regarded as accessory tubes, and since we find here cysts of all sizes, from

* Kossmann. *Allgemeine Gynæcologie*. Berlin, 1903. Verlag von August Hirschwald (pp. 351, 352, and Figs. 27 and 30).

† This refers to the presence of muscle in the cyst wall, and the character of the epithelium. Kossmann had not demonstrated the presence of plicæ.

that of a pea to that of a man's head, it should be the next step of the argument (*so dürfte es doch das Nachstliegende sein*) to regard all these cysts of the broad ligament as structures arising from accessory Müllerian ducts."

Kossmann thus absolutely rejects the parovarian theory of the origin of broad ligament cysts, and would apply to them the name *sactoparasalpinx serosa*. This broad statement seems at present unsupported by an adequate body of evidence. In the present paper I shall content myself with attempting to show that *those cysts of the broad ligament, developed above the tube, which are enucleable and possess a distinct cyst-wall, arise from the distension of accessory Fallopian tubes.* I believe the same statement is true for many broad ligament cysts situated *below* the tube, but the evidence on this point does not yet amount to proof.

The first shock to the exclusively parovarian theory was administered by Doran in 1884.* He showed that cysts may arise in the broad ligament far away from the parovarium, for example above the tube, or close to the uterus. In other cases, by careful dissection, he showed that an intact parovarium overlay the cyst posteriorly, without being in any way connected with it. He described minute cysts situated far from the parovarium, sometimes developed above the Fallopian tube, and in that situation, as also when developed below the tube, occasionally pedunculated. "It is often," he says, "from a minute cyst of this kind, free from the parovarian tubes, that is developed the large cyst commonly termed "parovarian," with its thin transparent wall, its single cavity lined with flat or low columnar epithelium, and its clear watery contents."

The possibility that these non-parovarian cysts were of Müllerian, *i.e.*, Fallopian origin, presented itself to Doran's mind, but with scientific caution he confined himself, in the absence of evidence, to the destructive criticism summarised above. He says:—"It might be contended that some of the minute non-parovarian cysts are developed from Müller's duct, which ultimately becomes the Fallopian tube. There is no evidence, however, that any true Fallopian cyst has ever been found, excepting such as are developed within its canal from obstruction, papillary growths, or extra-uterine gestation."

In order to demonstrate the possible origin of broad ligament cysts from accessory Fallopian tubes, it was necessary to find such a cyst in which the original communication with the main Fallopian

* Doran. "Tumours of the Ovary, Fallopian Tube and Broad Ligament." Smith, Elder and Co., 1884.

tube was still persistent. If in no solitary case such a communication could be found the Müllerian theory of the origin of broad ligament cysts must remain a piece of pure speculation.

It has been my good fortune to find, in the Museum of the Royal College of Surgeons, a broad ligament cyst, developed above the tube, possessing a minute communication with the lumen of the main tube. It is in fact the critical "Fallopian cyst" for which Mr. Doran asked. The specimen was described in a paper read before the Obstetrical Society in April last.* It appears to throw light on the whole question of the pathogenesis of broad ligament cysts; perhaps therefore I need not apologise for again directing attention to this specimen, before describing those I have met with more recently.

II. *A theory of the origin of accessory tubes.*

Kossmann* found that accessory tubes or accessory ostia occurred in from 4 to 10 per cent. of all cases. He states that they may or may not possess a lumen, and that the lumen if present never communicates with the main tube, but may open into the peritoneum. In the latter case a ring of fimbriæ is always present. A group of fimbriæ may occur even when the tube is impervious. Unstalked rings of fimbriæ (accessory ostia) are frequent.

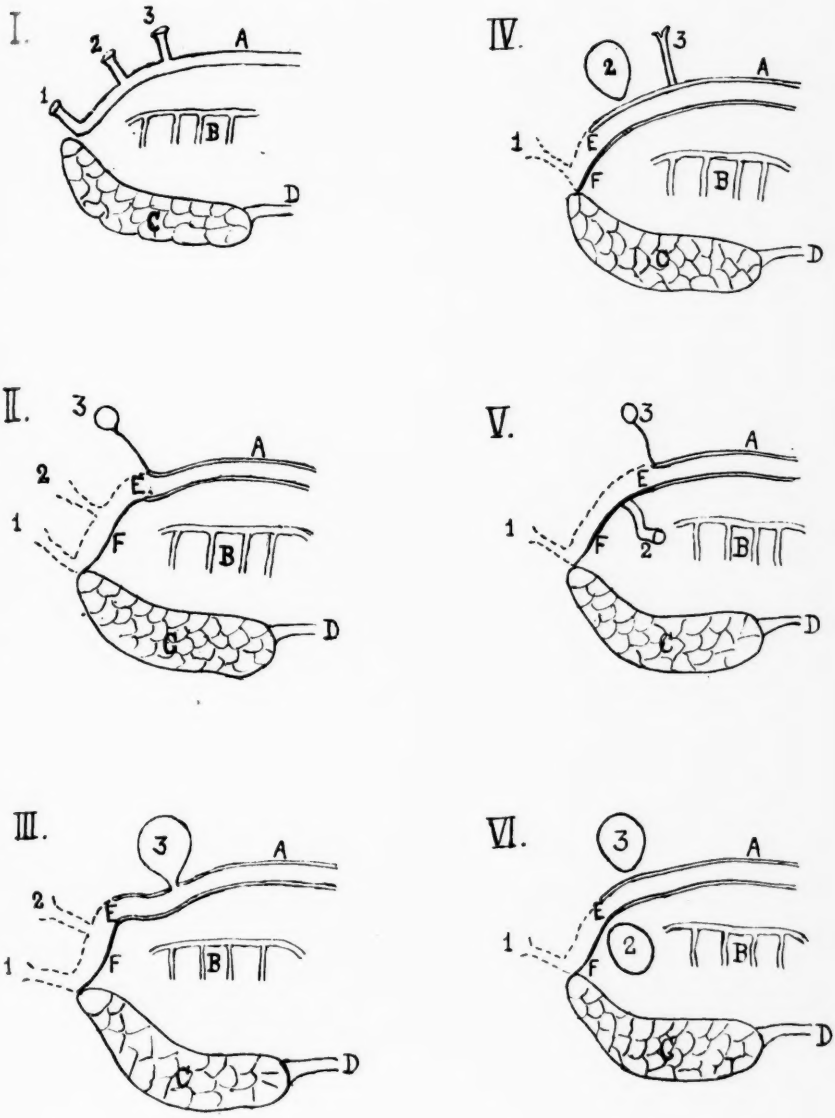
Kossmann believes that all these malformations arise from supernumerary embryonic rudiments of Müller's duct, parallel to the primary Müllerian duct, a theory which must be revised now it has been shown that an accessory tube may communicate with the main tube, and that accessory tubes are therefore to be regarded as diverticula of the main duct. Their origin may with more plausibility be referred to the three peritoneal invaginations from which the anterior part of the Müllerian duct probably arises.

In the chick, as Balfour and Sedgwick showed, the anterior part of the Müllerian duct is developed from three invaginations of the peritoneal endothelium. These invaginations, which represent the pronephros, become connected by a solid subperitoneal column of epithelial cells. This column is subsequently hollowed out to form the anterior part of the Müllerian duct. The posterior part of the Müllerian duct arises as a thickening, which later becomes pervious, on the ventral side of the primitive segmental duct.

* "A Case of Hydrosalpinx of an Accessory Fallopian Tube." *Trans. Obst. Soc.*, Vol. XLV., Part 2, 1903.

* Kossmann. *Ueber accessorische Tuben und Tubenostien. Zeitschrift für Geb. und Gyn.* Band xxix., p. 253.

PLATE I.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It has been proved for the human embryo that the posterior part of the Müllerian duct arises as in the chick from three peritoneal invaginations or pronephric funnels. The abdominal ostium is probably formed by a secondary dehiscence of the upper part of the Müllerian duct, which commencing at the upper end of the Müllerian duct extends across and obliterates the first two of these pronephric funnels, leaving the third as the hydatid of Morgagni. It is usually stated that the hydatid of Morgagni represents the upper end of the Müllerian duct. If such is the case, the difficulty arises, what is the morphology of the ovarian fimbria? This fimbria extends to a point close to the ovary, beyond, and originally higher than, the point of attachment of the hydatid, and must clearly represent a portion of the Müllerian duct.

The difficulty disappears if it be assumed that the upper end of the Müllerian duct is represented by the ovarian end of the ovarian fimbria. The hydatid of Morgagni is a persistent pronephric funnel, probably the lowest of the original three. The other two pronephric funnels are usually obliterated by the secondary dehiscence of the duct, which, commencing at the tip of the ovarian fimbria extends as far as the stalk of the hydatid of Morgagni. Exceptionally they may persist, whether they retain or lose their communication with the main duct, as accessory Fallopian tubes serially homologous with the hydatid. Accessory ostia arise simply from faults in the secondary dehiscence of the Müllerian duct.

This theory explains quite simply and clearly the origin of the abnormalities described in this paper. The subjoined diagrams (Plate I.) illustrate it. I may add that I have seen representatives of one, two, and three pronephric funnels attached to a Fallopian tube, but never of more than three.

III. *The anatomy of ordinary hydrosalpinx.*

It will be essential, for purposes of comparison, to consider some points in the anatomy of ordinary hydrosalpinx. A fact to be particularly noted is that the wall of a hydrosalpinx is thickest at the uterine end, and that its thickness progressively diminishes towards the ostial end. Correlated with this gradual attenuation of the wall there is a corresponding fibrous and hyaline tissue-degeneration.

A ribbon section, taken in the long axis of an incomplete hydrosalpinx (*i.e.*, one which has not distended the tube right to its uterine end), shows the following changes. At the uterine end of the hydrosalpinx where the wall may be about $\frac{1}{4}$ inch thick, its structure

is practically that of a normal Fallopian tube. By van Gieson's method the muscle stains a characteristic reddish-yellow. The plicæ in section are well-developed branching structures, and are covered by a single layer of columnar epithelium, which often has not lost its cilia. Between the plicæ the epithelium has lost its cilia and has become cubical. All the nuclei stain well. A little further out, where the wall has diminished to $^1/_{14}$th of an inch in thickness, the muscular layers are still easily to be recognised. In their reaction to van Gieson's stain they resemble, however, fibrous tissue, staining bright red instead of the reddish-yellow of normal muscle. The plicæ are seen as simple finger-like elevations, covered by epithelium no longer columnar but cubical and non-ciliated. The wall between the plicæ has completely lost its epithelial lining. The loss of epithelium, except on the plicæ, may thus be quite an early incident in the degeneration of a hydrosalpinx.

As the wall is traced still further towards the ostial end, the staining, both of the nuclei and of the ground-tissue, becomes fainter. The muscular layers are becoming converted into a hyaline scantily-nucleated tissue, and can be no longer clearly recognised as muscle, or distinguished sharply from the submucous fibrous tissue. The plicæ are smaller, and have lost their epithelium or are only covered by a layer of flattened cells, which may extend a little way along the wall on either side of the plica. A very striking fact is that the connective tissue of the plicæ has not shared to the full extent in the degeneration of the wall from which it springs. While the substance of the wall is scantily nucleated and badly stained, the plicæ springing from it may still show numerous well-stained nuclei, even if denuded of epithelium. This difference seems to be due chiefly to their greater vascularity. A well-formed vessel may usually be seen at the base of a plica though there are very few vessels in the substance of the wall.

When the wall of the hydrosalpinx has diminished to about $^1/_{20}$th of an inch in thickness, the plicæ, however, disappear altogether, and the wall consists simply of hyaline fibrous tissue, in which some trace of the original arrangement of the muscle in two layers still remains. But even beyond the point where the plicæ disappear, sub-plical spaces formed by the fusion of the free edges of adjoining plicæ may be found as elongated flattened lacunæ lying in the substance of the wall just beneath its inner surface. They may be lined with very flattened epithelium, or may be entirely devoid of it. It is in this situation that the epithelial lining of a hydrosalpinx persists longest.

Finally the wall of the hydrosalpinx near the ostial end becomes in section a ribbon of hyaline fibrous tissue, smooth on its internal and external surfaces, and presenting no indication of its origin from a Fallopian tube.

Some of the characteristics of a hydrosalpinx are to be explained by the gradual increase in the size of the lumen of the normal tube from the uterine to the ostial end. When fluid is pent up in the tube its pressure acts at the greatest mechanical advantage in that part of the tube where such pressure can be brought to bear on the largest area, *i.e.*, where the lumen is widest. Unless, therefore, the wall is much stronger where the lumen is wide than where it is narrow, it will begin to yield at the former point. It does not appear that the wall of a Fallopian tube is any thicker at its ostial than at its uterine end; sactosalpinx therefore nearly always begins at the ostial end, and the distension slowly extends to the uterine end of the tube. The transverse stretching of the tube is accompanied by longitudinal stretching, and as the broad ligament cannot elongate to a corresponding extent the tube becomes kinked, and the characteristic bent retort shape is produced. The fact that distension begins at the ostial end accounts for the fact that the wall is attenuated and degenerate towards that end.

The sequence of degenerative changes seen in tracing a section of the wall from the uterine to the ostial end is a sort of cinematographic view of the changes that occur at each point of the wall from the time distension begins until it has reached its maximum. Probably in a very large hydrosalpinx no trace of tubal structure would be found. The above description was chiefly taken from a specimen of partial hydrosalpinx where the distension had only involved the outer portion of the Fallopian tube; in other words, the hydrosalpinx was still in course of formation.

The salient points in the anatomy of ordinary hydrosalpinx then are:—

1. The diameter of a hydrosalpinx increases, the thickness of its wall decreases, from the uterine end to the ostial end.

2. The over-stretching of the tube leads to hyaline degeneration of its wall. The muscle becomes fibrous tissue. The epithelium loses its cilia, becomes flattened and disappears. These changes are most marked at the ostial, least at the uterine end, and may be seen in all gradations in the same hydrosalpinx.

3. The plicæ are very persistent structures. They resist degeneration longer than the wall at the point where they arise, and

may retain their epithelium and stain well after the wall from which they spring has become hyaline and scantily nucleated.

IV. *Description of specimens.*

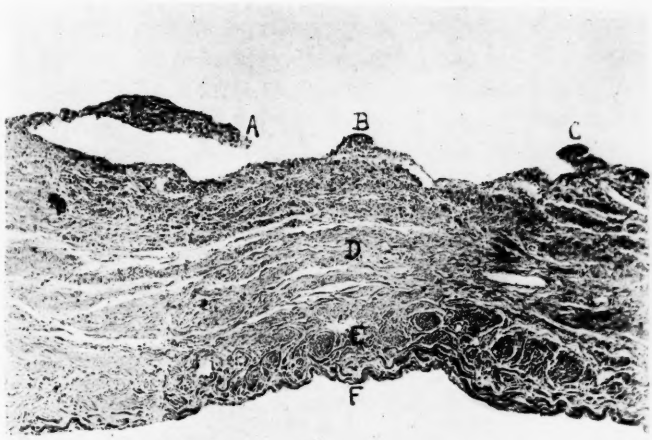
Specimen 1. This specimen, which I brought before the Obstetrical Society in April, 1903, is, I believe, the first conclusive case of accessory hydrosalpinx on record. It is No. 4,582 in the pathological series of the Museum of the Royal College of Surgeons, and is described in the catalogue as follows:—"4582. A thin-walled pyriform cyst, developed under the broad ligament at the point where it is reflected over the Fallopian tube. Presented by Mr. Lawson Tait." I am indebted to Mr. Shattock for permission to make a further examination of this and other specimens in the R.C.S. Museum, for the help he has given me, and for the kind interest he has taken in my work. No. 4582 consists of the outer portion of a Fallopian tube, about 2·5cm. in length, to the upper border of which the cyst is attached. The ring of fimbriæ is well developed, the ostium is patent but is rather small, admitting an ordinary surgical probe. Along the inferior border of the tube is a small portion of the broad ligament. The specimen shows no signs of inflammatory processes of any kind, either in the form of adhesions or thickening of tissue. (See Plate III., upper figure.)

Attached almost vertically to the upper border of the tube, 1cm. from the ostium, is a small pear-shaped cyst. Its long diameter, which is slightly concave on the side which looks towards the uterus, runs upwards and outwards from the upper border of the tube, forming with it on its uterine side an angle of about 120°. The cyst is covered by smooth peritoneum quite free from adhesions, and the peritoneum of the tube adjacent to the cyst shows no sign of having been pulled upon by the growth of the cyst. A slight constriction runs round the cyst just below the equator of its long axis.

On opening the cyst its wall is seen to be 1·5mm. thick at its attached end, rapidly thinning, however, it becomes more and more attenuated until at the free pole it is only ·3mm. thick. As seen from within, its upper pole forms a rounded concavity, while its lower pole is a funnel-shaped depression apparently running to a point. Branching fibrous-looking bands standing out in relief, and for the most part running in the long axis, divide the internal surface into shallow unequal loculi like those of an ordinary hydrosalpinx.

A small blowpipe was introduced into the uterine end of the tube while the specimen was under water, and when air was blown

PLATE II.



(i.)

(ii.).

(iii.).

into the tube bubbles escaped freely by the ostium. When the ostium was closed by the pressure of a finger the tube became distended, and a stream of fine air-bubbles escaped from the tube into the interior of the cyst.

Microscopical sections have been cut of a strip of the wall of the cyst 30mm. long, commencing at the attached pole of the cyst and extending nearly to its free convex end in the longitudinal axis. At its base the section is 1·5mm. thick, tapering off distally to a thickness of ·3mm. In a section stained with eosin and hæmatoxylin, Mr. Shattock pointed out that while at the thick end of the section the nuclei and ground-tissue are well stained, at the thin distal end hardly any nuclei are visible. In the latter situation the wall, while retaining the general arrangement of its layers, has a hyaline appearance.

The layers visible along the whole length of the section are from without inwards:—

1. A thin tortuous fibrous-looking lamella, showing an occasional nucleus—the peritoneum.

2. A well-developed muscular layer consisting of alternating layers of longitudinal and circular unstriated muscle. The arrangement of the muscular layers is irregular and they appear to interlace. In places three layers are visible, an outer and inner longitudinal and a middle circular layer. At other points as many as eight alternating layers are traceable.

3. A thin layer of fibrous tissue, representing the submucosa.

4. Most internally an imperfect granular layer, absent at the distal end, containing stained points which appear to be broken-up nuclei. In places the free border of this layer shows vertical striation.

Sections at different points show certain peculiarities. Near the proximal end of the section there is a considerable amount of fibrous tissue between the muscular bundles. The nuclei of the circular muscle coat are well stained. Here also are seen several sections of atrophied plicæ, exactly resembling those of an ordinary hydrosalpinx. They are bare of epithelium. The plicæ are seen as finger-like processes of vascular and richly nucleated fibrous tissue containing obvious blood-vessels. (See Plate II., Figs. i. and ii.).

At one point there is visible one of the flat lacunar spaces which represent the interval between two plicæ conjoined at their edges. The characteristic point about these sub-plical lacunæ is that the floor of the lacuna is on a level with the general internal surface of the hydrosalpinx, so that the lacuna itself is situated within an

inwardly projecting convexity of the floor of the cyst. Another proof of their nature is afforded by comparing two of my sections cut from the same block. In one of these two small separate plicæ are seen close together; in the other, at a corresponding point along the length of the section, is a convex elevation containing a subplical space.

About midway along the length of the section the layer of debris representing the epithelial lining is best developed. At one point the $^{1}/_{12}$th objective shows a distinct row of columnar cell-outlines, each with a definite nucleus and possessing doubtful cilia.

At the distal end of the section the epithelial débris is absent, and the sub-mucous coat is represented by a thin fibrous band. The muscular layers are still distinct.

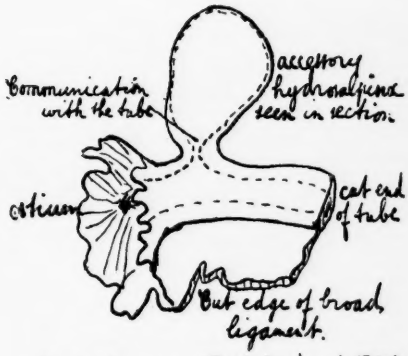
There is no need to labour the obvious fact that this cyst is a miniature hydrosalpinx complete in every detail, except that it lacks the dimple which often represents the closed ostium at the distal end of an ordinary hydrosalpinx. The shape of the cyst, like a pear or the body of a retort, the progressive thinning of its walls as they reach their maximum diameter, with a corresponding tissue degeneration, the imperfect loculation of its interior, the muscular structure of its walls, and the presence of traces of a columnar epithelium, are almost sufficient to show its nature. But the presence of plicae, which so far as I know are structures quite peculiar to the Fallopian tube, sets the matter beyond a doubt, even if no communication with the interior of the tube had been demonstrated.

The only other possible explanation of the cyst would be as a distension sacculus of the Fallopian tube. But the anatomical characters of the cyst are entirely unlike those or any distension sacculus I have ever seen, especially in that it possesses a distinct short stalk, traversed by a minute channel. Besides, the abdominal ostium of the tube is patent, so that there can have been no undue pressure within the tube to produce such a sacculus.

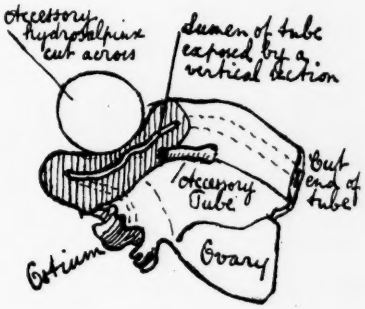
Since accessory Fallopian tubes do not as a rule communicate with the lumen of the main tube, it is to be expected that such a communication will only rarely be found in a hydrosalpinx of an accessory tube. In the case I am about to describe no communication with the main tube was present, but the presence of plicae within the cyst enabled its nature to be determined beyond the possibility of doubt. This specimen also was found in the Museum of the Royal College of Surgeons.

Specimen 2. The specimen is No. 4,583a in the Pathological

PLATE III.



R.C.S. Museum, Path. Series 4582.



R.C.S. Museum, Path. Series 4583A

R.C.S. Museum, Path. Series 4583.

Series of the Royal College of Surgeons Museum. It is described in the catalogue as follows:—"4583A. The outer third of a Fallopian tube. From its upper border, a quarter of an inch from the fimbriated extremity, projects a thin-walled pyriform cyst, about $\frac{3}{4}$in. in diameter, and resembling those shown in the preceding specimens. The cyst is not a process from the tube, nor even adherent to its walls, but lay in the broad ligament at the point where that fold of peritoneum was reflected over the upper border of the tube. The ligament has been dissected off one aspect of the cyst. The cyst lies far from the site of the parovarian tubes or of the hydatid of Morgagni. Presented by Lawson Tait, Esq., 1881."

One or two points in connection with the specimen remain to be mentioned. On the outer side of the cyst there is a small conical diverticulum projecting upwards from the main tube and ending in a blunt point. On the anterior surface of the tube about 3cm. from the abdominal ostium there is attached a small cylindrical process 1cm. long and 2mm. broad. It projects outwards and ends in a tiny tuft of fimbriæ. It has no lumen connected with the main tube. The presence of an imperfect accessory tube, for such this appendage undoubtedly is, is strongly suggestive of the nature of the cyst above the tube. The cyst shells out easily from the peritoneum and has no communication with the main tube. (See Plate III., *Middle Figure.*)

A portion of the cyst was obtained for re-examination. The first two strips of the wall examined gave a disappointing result. The sections showed a smooth interior lining of cubical epithelium, resting on a fibrous-looking wall consisting of coarse fibrous strands containing numerous long strap-shaped nuclei. The wall did not give the muscle-reaction with van Gieson's stain and might or might not consist of degenerate muscle. These first negative results show how easily the presence of plicæ in a broad ligament cyst may be overlooked.

A section was next cut in the long axis of the Fallopian tube of the cyst and tube, where the two were contiguous. At the ends of the section, a layer of loose areolar tissue, in which large vessels run, intervenes between the cyst and the tube-wall. In the middle of the section the wall of the Fallopian tube is closely connected with the cyst, and is much thinned, although the tubal plicæ at this point are more exuberant than near the ends of the section.

The thinning of the wall of the Fallopian tube at the point of implantation of the cyst clearly indicates an original communication which became obliterated later on. Within the limits of this thin

area of the tube there is no clear separation between the wall of the tube and of the cyst. On one edge of the section is the cubical epithelium of the cyst, on the other the columnar epithelium of the tube. Along the middle of the section is muscle, cut transversely. Intervening between this transverse muscle and the epithelium of the tube is a layer of longitudinal muscle, while between the transverse muscle and the epithelium of the cyst is a layer only differing from the longtitudinal muscle of the tube by its more hyaline appearance and the paucity of its nuclei. A study of this section, which is represented in Plate IV., *Upper Figure*, shows pretty clearly that the wall of the cyst consists chiefly of degenerate muscle.

At one point in this section, projecting into the interior of the cyst, is a group of several plicæ, which are represented in Plate IV., *Middle Figure*. There is no need to describe them in detail. Although more rudimentary than those found in Specimen 1, their structure is identical. Their epithelium is well preserved, and in places columnar.

To sum up, Specimen 2 is an accessory hydrosalpinx which has lost its primal connection with the main tube. The facts which prove this are:—

1. The thinning of the wall of the Fallopian tube, at the seat of attachment of the cyst.

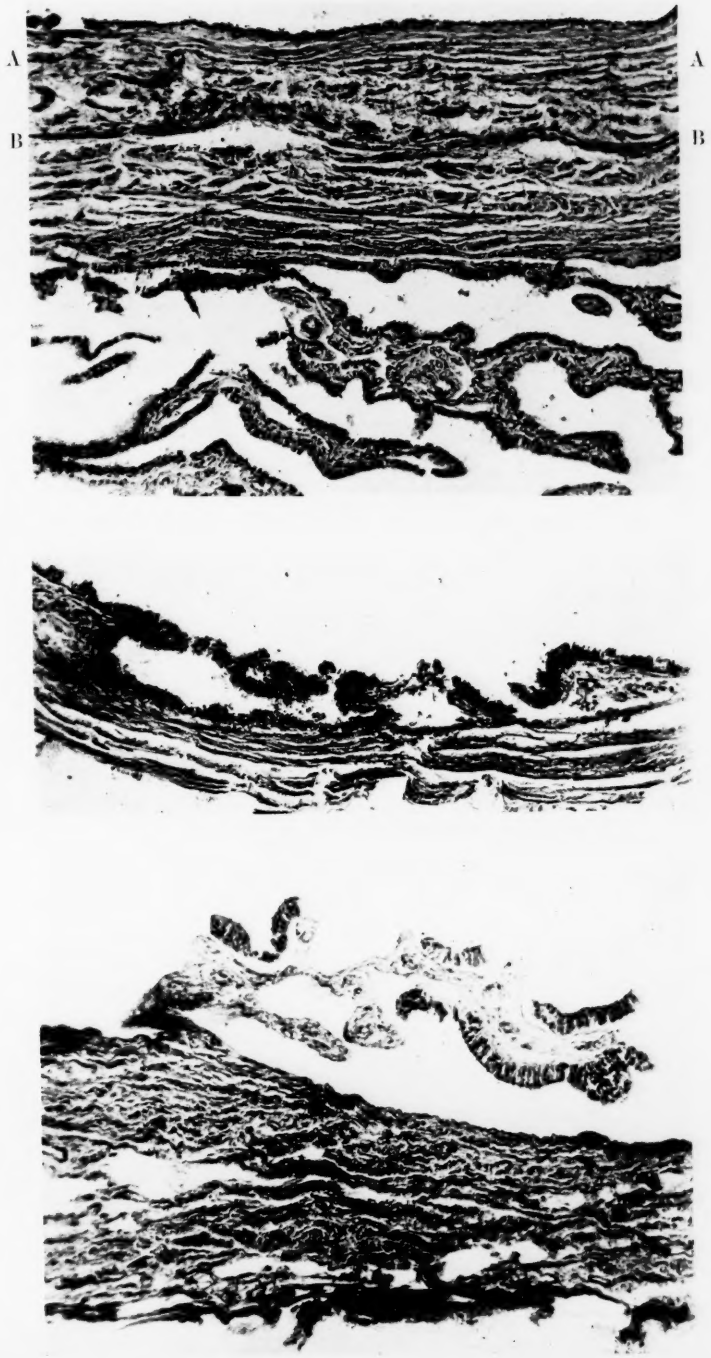
2. The blending of the walls of the cyst and of the tube at this point.

3. The presence of plicæ in the interior of the cyst.

4. The presence in connection with the specimen of an imperfect accessory tube which has not become cystic.

Specimen 3. In February of this year my colleague, Mr. J. D. Malcolm, in the course of an operation for a left ovarian dermoid, found and enucleated two small cysts, each about 1 inch in diameter, which lay one above and one below the right Fallopian tube. These cysts Mr. Malcolm kindly handed to me for examination. The cyst above the tube (see Plate II., Fig. iii.) was pear-shaped, and attached by its narrow end to the upper surface of the tube just internal to the abdominal ostium. Its wall was thickest at the narrow end, and became gradually attenuated towards the larger free pole of the cyst. On holding the cyst up to the light numerous branching plicæ on its inner surface could be clearly seen through the thin cyst-wall. The cyst contained watery fluid which was unfortunately not examined. A section through its wall showed that the lining epithelium had disappeared except on the plicæ. The largest plica (see Plate IV., *Lower Figure*) was a well developed branching structure, attached by a narrow base to the interior

PLATE IV.



of the cyst, and still covered by a well preserved single layer of columnar ciliated epithelium. The cyst wall at its stoutest part consisted of an internal layer of fibrous tissue, outside which were interlacing layers of clearly recognisable muscle forming the principal thickness of the wall, and covered by peritoneum. The thin distal portion of the cyst wall consisted simply of a band of hyaline fibrous tissue in which no layers could be definitely recognised.

This specimen, though not communicating with the main tube, showed the peculiarities of an accessory hydrosalpinx very markedly. The most interesting point about it is that the plicæ were visible clearly to the naked eye. The cyst below the tube apparently resembled the one above the tube exactly, but no plicæ were found in it. As this paper is only concerned with cysts above the tube I do not propose to describe it further.

Specimen 4. This specimen is No. 4583 in the Pathological Series of the Museum of the Royal College of Surgeons. The catalogue describes it as follows:—"4583. A similar cyst.* Below the Fallopian tube lies another cyst, developed between the layers of the broad ligament. Presented by Alban Doran, Esq., 1884." A photograph of this specimen is shown in Plate III., *Upper Figure.*

A section of the upper cyst in this specimen shows that the wall consists chiefly of lamellated fibrous tissue which does not give the muscle reaction with van Gieson's stain. Even where the wall is thickest there is no tissue showing the characteristic arrangement of unstriated muscle. The cyst is lined partly by flattened, partly by cubical epithelium, while here and there its epithelium has disappeared altogether. These characters would leave the nature of the cyst altogether uncertain. But fortunately at one point the section had passed through a well-formed plica possessing a richly nucleated core and a covering of epithelium which was still columnar though not definitely ciliated. Proof was thus afforded that the cyst was an accessory hydrosalpinx. (See Plate IV., *Lower Figure.*)

The fact that only one plica was cut across in a section nearly three-quarters of an inch long, shows how easily the presence of these structures in a broad ligament cyst may be overlooked. The cyst below the tube in this speciment appeared to the naked eye exactly similar to the cyst above.

V. *Summary.*

The characters of a typical accessory hydrosalpinx may thus be

* The reference is to the preceding specimen 4582, Specimen 1 of this paper.

summarized. It is an egg-shaped cyst, developed between the layers of the broad ligament, and having its smaller end directed towards the Fallopian tube, with which however it rarely communicates. Its wall becomes more and more thinned and degenerate towards the larger pole of the cyst away from the Fallopian tube. In its early stages, while still small, and at the thickest part of its wall, all the layers of a Fallopian tube are recognisable. In its late stages, and at the thinnest part, the wall may simply consist of a lamella of hyaline fibrous tissue. As in an ordinary hydrosalpinx these two extremes of structure, and all the intermediate gradations, may occur in the same cyst. It follows that in the same cyst columnar ciliated, columnar, cubical and flattened epithelium may each be found, while at other points the epithelium may have disappeared altogether. The presence of plicæ in a cyst, ordinary sactosalpinx being excluded, is pathognomonic of accessory sactosalpinx. The plicæ, owing to their excellent blood supply, preserve their identity, and often their epithelium after the muscle of the cyst wall has degenerated into fibrous tissue. They are few in number and may easily be missed in a microscopical examination. They should be looked for at the smaller end of the cyst next the Fallopian tube.

In examining broad ligament cysts to determine whether they arise from accessory Fallopian tubes the important points to settle are the presence of plicæ, and of a communication with the main tube. The latter question cannot be solved by probing. The cyst being opened, the Fallopian tube should be inflated with air while the specimen is under water. If a communication is present air bubbles will escape into the cyst.

The main points of this paper may be stated as follows:—

1. A broad ligament cyst may communicate with an otherwise normal Fallopian tube.

2. A broad ligament cyst may possess plicæ identical with those seen in an ordinary hydrosalpinx.

3. Therefore such broad ligament cysts arise from accessory Fallopian tubes.

4. Plicæ are present in all the broad ligament cysts, developed above the tube (four in number) which I have examined.

5. Therefore, until the contrary is proved, it is a fair inference that all enucleable cysts of the broad ligament, developed above the tube, arise from the distension of accessory tubes, parasitic cysts of course excepted.

The occurrence in two of the specimens of a cyst below the tube in many respects similar to the accessory hydrosalpinx above the

tube is a very suggestive fact. I hope on a subsequent occasion to deal with the question of the origin of broad ligament cysts below the tube.

Description of Plates.

Plate I. (i.) Illustrates very diagrammatically the mode of origin of the anterior part of the Müllerian duct in the chick according to Balfour, and probably also in the human female. A, Müllerian duct; B, Mesonephros; C, Ovary; D, Ovarian ligament; 1, 2 and 3, the pronephric invaginations represented as diverticula of the Müllerian duct opening into the cœlom.

(ii.) Represents the normal condition of the human Müllerian duct after the abdominal ostium has been formed by secondary dehiscence. Morphologically the ostium extends from the ovarian end of the ovarian fimbria to the base of the stalk of the hydatid of Morgagni. The parts obliterated by this secondary dehiscence are represented by a dotted line. E, Anatomical ostium; F, Ovarian fimbria; other letters as before. The upper end of the Müllerian duct is now represented only by the ovarian fimbria; 3, the only persistent pronephric funnel, is the hydatid of Morgagni.

(iii.) Shows the developmental explanation of Specimen 1 (cf. Plate III., *Upper Figure*). Dehiscence has not extended so far downwards as usual, the "hydatid of Morgagni" is absent, but the third pronephric funnel, 3, is represented instead by an accessory hydrosalpinx communicating with the main tube. Letters as before.

(iv.) Shows the developmental explanation of Specimen 2 (cf. Plate III., *Middle Figure*). Dehiscence here has only extended far enough to obliterate the first pronephric funnel. The second, 2, is represented by an accessory hydrosalpinx not communicating with the main tube. The third pronephric funnel, 3, is represented by an imperfect accessory tube.

(v.) Illustrates the possibility that one or more of the pronephric funnels, in this case the second, may become so twisted round by an irregularity of development as to lie below the tube, between the layers of the broad ligament. There is some evidence for this possibility.

(vi.) Illustrates the developmental explanation, assuming the correctness of the preceding figure, of Specimens 3 and 4 (cf. Plate III., *Lower Figure*). The cysts 2 and 3 represent the second and third pronephric funnels.

Plate II. (i.) Longitudinal section ×60 of wall of accessory hydrosalpinx, specimen 4582 Path. Series, R.C.S. Museum.

A is a well formed plica projecting into the interior of the cyst, B and C are rudimentary ones. The lining epithelium of the cyst has disappeared, though traces of it may be seen, especially on the plica A. The internal layer of the cyst-wall is formed by fibrous sub-epithelial tissue. Outside this is longitudinally cut muscle D, and outside this again a layer of transverse muscle E. The most external layer, F, is the peritoneum. Photo micrograph by Messrs. W. Watson and Sons.

(ii.) *A*, Small plicæ from Specimen 1 under a rather higher power. *B*, A plica from an ordinary hydrosalpinx drawn with the same magnification, for comparison with *A*, and with Plate II., i.

(iii.) Diagram, natural size, of the cyst above the tube in Specimen 3. The plicæ are seen as dark lines showing through the thin wall. A section of the plicæ is shown in Plate IV., lower figure.

PLATE III. Photographs, by Mr. H. George, of specimens of accessory hydrosalpinx found in the Museum of the Royal College of Surgeons. Natural size. Key-diagrams attached. The upper figure represents Specimen 1, the middle one Specimen 2, the lower one Specimen 4.

PLATE IV. *Upper figure.* A section across the partition wall between the cyst and the Fallopian tube in Specimen 2. Along the upper edge of the photograph is seen the lining epithelium of the cyst, cubical in this situation. Below is seen the epithelium of the Fallopian tube, with numerous branching plicæ. AA indicates the plane where the walls of the cyst and the tube blend together. There is no line of demarcation between them at this point. BB is a long lacunar space in the wall of the Fallopian tube, perhaps a relic of the original communication between cyst and tube. ×85. Note the close resemblance, in structure, of the wall of the cyst and of the tube.

Middle figure. Another portion of the same section, representing the wall of the cyst in Specimen 2 at a point where a group of rudimentary plicæ occurs. The epithelium is in places columnar. Contrast the plicæ with the smooth lining of the part of the cyst represented above. Note their close resemblance to the rudimentary plicæ seen towards the right-hand side of Fig. 2, p. . The section is not a good one, the material having been for years in spirit.

Lower figure. A plica from the interior of the upper cyst in Specimen 3 (Plate II., iii.). The cyst wall, which consists chiefly of degenerate muscle, has lost its epithelium. The plica, however, is a well-developed branching structure, partially covered by well-preserved columnar ciliated epithelium.

A CASE OF TUBAL GESTATION IN WHICH THE OVUM CONTINUED TO GROW FOR ABOUT FOUR WEEKS AFTER RUPTURE, THE GESTATION SAC BECOMING IMPLANTED ON THE OMENTUM.*

By CUTHBERT LOCKYER, M.D., *Physician to Out-Patients, Samaritan Free Hospital, etc., etc.*†

THE patient was first seen by Dr. Marshall, of Twickenham, on December 31st, 1902, when she gave the history of having miscarried on December 27th after having had amenorrhœa since the end of October. There was then no sanguinous discharge, and the os uteri was closed. The patient complained of pain and tenderness in the left hypochondrium, but there was no swelling to be felt.

On January 11th, 1903, the patient's condition became critical; there was intense pain in the left hypochondrium, but no abnormality was found on vaginal examination. She had every appearance of a woman about to die, but Dr. Marshall was unable to determine whether from strangulation of the bowel or from internal hæmorrhage. Next day she improved, and dulness was found to the left of the mid-line near the umbilicus, but no tumour was discoverable.

On January 20th a swelling was detected in the left ovarian region; the uterus was found to be enlarged; pyosalpinx was then diagnosed.

On February 5th the patient again became profoundly collapsed, and suffered severe abdominal pain; from this she partially rallied, and on the 7th of February was removed to the St. John's Hospital. Two days afterwards Dr. Marshall diagnosed extra-uterine gestation. On the evening of the 9th of February the patient was once more severely collapsed, and was with difficulty kept alive, but the critical symptoms abated somewhat, and she was seen by Dr. Routh the next day (February 11th).

Remarks by Dr. Routh:—

"When I first saw the patient she was ashy pale; the pulse was feeble, with a frequency of 140; the temperature was 100°F. The left side of the abdomen was tender, and occupied by a resonant

* Read at a meeting of the Obstetrical Society, October 7th, 1903.

† I am indebted to Dr. Amand Routh for the kind permission to publish this case and for supplying the clinical data.

elastic swelling extending to the mid-line, and reaching from the border of the ribs to a hand's breadth above Poupart's ligament. *Per vaginam* the uterus was found retroverted, enlarged and semi-fixed. There was no evidence of extravasation of blood either in the broad ligament or in the pouch of Douglas. It was evident that the patient had had four distinct attacks of internal hæmorrhage, and it was possible that the supposed abortion on December 27th was really the passage of a uterine decidua. Against the diagnosis of any form of extra-uterine gestation was the fact that, with the exception of a slight hæmorrhage on December 27th, she had had no loss of blood from the end of October to February 11th. The definite development of an abdominal tumour, however, made the diagnosis of a partially encysted hæmorrhage, due to tubal rupture, most probable; so, with Dr. Marshall's aid, I opened the abdomen at once. Immediately beneath the incision the omentum was found ballooned out by free subjacent blood which welled up as soon as it (the omentum) was drawn aside. The fœtus then appeared in the wound, still attached by its cord to the placenta. Free hæmorrhage was taking place from the bottom of the pelvis. I traced the cord to a large ruptured amniotic sac and placenta, which latter was almost entirely detached, but was still broadly adherent to omentum and to the left broad ligament in two places; these attachments I rapidly clamped off, and I then removed the placenta. It was evident that the placenta had been recently separated from the left broad ligament and from part of the rectum and side of the brim of the pelvis, as blood was coming from all these places. Finding that bleeding was going on from so large a surface, and that it was a general oozing and not arterial or venous hæmorrhage from any definite spots, and that it was impossible to stop it by ligature, I passed down into the pelvis a 'petticoat' of iodoform gauze, filling this with the same material, and so arrested the bleeding. As the patient was then pulseless I filled up the abdomen with saline solution, and at the same time gave two pints per rectum through a long flexible tube. I then rapidly closed the abdomen in two layers, except where the gauze issued at the lower end of the incision. The patient's pulse rapidly improved, and recovery seemed possible.

"I subsequently heard, however, that severe pain and uncontrollable vomiting came on soon after the effects of the anæsthetic had passed off, and that she died 24 hours after the operation. Nine hours after the operation her pulse and respiration were still feeble, and her sickness was worse, but the pain was less. Twelve hours after operation she was very exhausted, and neither the

stomach nor rectum could retain nutriment. Morphia was now administered, and for a time the patient dozed, but during the night she became more collapsed, and died 24 hours after the operation. Dr. Marshall was of opinion that the bleeding recurred during the night, probably induced by the vomiting which he attributed to the anæsthetic (ether), though it is possible that it was due to the irritating effect of the gauze plug in the true pelvis."

The specimen consists of omentum, placental tissue, amniotic sac and fœtus. The fœtus corresponds with a four months' gestation; it belongs to the male sex, and measure 5·6 inches, or 14cm. The umbilical cord is divided, with two inches attached to the fœtus and the remainder adherent to the edge of the amnion; its insertion is velamentous. The placenta, with adherent omentum, measures 13 × 11cm. The amniotic sac is completely hidden, being overlaid in front by infiltrated omentum in its upper half, and below, by dark-blue and chocolate-coloured blood-clot. Behind the sac lie the chorionic tufts of the placenta embedded in blood-clot for the most part, but the villi are seen as bare cotelydons in places where they were adherent to adjacent structures prior to removal. The whole mass is of a flattened ovoid shape with its long axis in the transverse direction. At the lower extremity of the ovoid is seen—on the inner side—the cut end of the Fallopian tube, at the outer side the free ampullary tubal extremity. This latter measures 5c.m. in length; it is pervious for the outer 3c.m., and is very much altered in shape, being widened out like a spatula, whilst in its inner 2c.m. it is reduced to a thin fibrous cord with about half the diameter of the normal tube. Between the uterine cut end and the free ampullary extremity the tube is lost to view, being hidden by blood-clot in front and by placental tissue behind. On deflecting the lamina of blood-clot from the front and passing a bristle through the cut uterine end of the tube, the latter is seen to be deficient on its upper aspect for the space of 5c.m. Here the anterior wall is expanded out as a thin sheath on the deep surface of the deflected clot. Where the upper tube wall is deficient, the anterior wall lies in apposition to the amniotic sac, and to the naked eye the thinned-out tubal wall appears to fuse behind with the placental tissue at the line of attachment of the amnion. At one spot on the front of the mass, situated below the limit of adherent omentum and above the line of the tube, the blood-clot, which alone overlies the amnial sac at this point, is very thin and is paler than the rest. Here the clot has given way, leaving an irregular space through which the fœtus escaped. There is no attempt at hæmatocele formation, and the

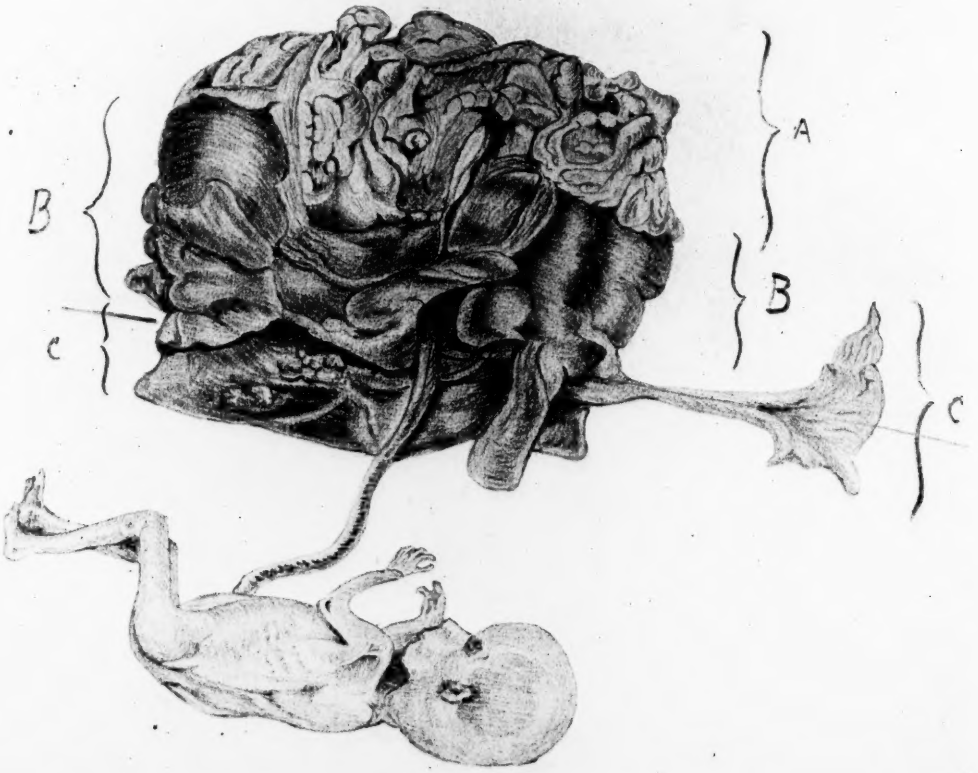
explanation which suggests itself to account for such an ectopic fœtation is that the tube ruptured through its peritoneal surface, and, owing to the proximity of omentum, the extruded villi got an immediate attachment thereto. By subsequent tubal contraction a gradual transplantation of the placenta occurred, similar to that which takes place between the layers of the broad ligament, the omentum doing duty, so to speak, for the broad ligament in this instance, by aiding to shut off the general peritoneal cavity and limiting the space for effusion of blood. In this way a secondary gestation sac was formed, which ultimately burst through its thinnest point, *i.e.*, at the point on the front where the omentum, if present at all, is too thin to be detected, on or beneath the old blood-clot which at this spot appears to be the only covering the amniotic sac had.

The interest in this specimen lies in the manner in which the abdominal implantation of the gestation sac has been brought about. By dissection and microscopical examination it is clearly shown to be an example of secondary abdominal pregnancy. Sections of the tube wall, where the latter is attached to the amnion, show that it is invaded by chorionic villi which mark the site of the primary embedding of the impregnated ovum in the tube. The rupture occurred in the early weeks, and was not fatal. The eroding villi crept out and at once gained omental attachments without ever losing their hold on the tube, and thus at no time was the fœtus cut off from its nutritive supply. The villi subsequently acquired visceral attachments to the rectum, and also to the peritoneum forming the posterior layer of the broad ligament. The fœtus remained alive until its escape through the large rectangular tear in the secondary gestation sac, which took place just before the operation. That the sac should have ruptured when it did was probably due to the large share taken by the omentum in the formation of the upper and front aspects of the secondary gestation sac.

Until Lawson Tait made the important assertion in 1888 that every aberrant gestation started in the tube, all abdominal pregnancies recorded in the *Transactions* of the Obstetrical Society, and elsewhere, were regarded as primary, and little or no trouble was taken to investigate the state of the Fallopian tubes, sometimes for the reason that the placenta covered in the true pelvis at the time of operation "like the lid of a pot," as in Jessop's often-recorded case, where, since the life of the patient was spared, no opportunity was afforded of examining the structures deep to the placenta. More often, however, the investigation of the tubes was overlooked, because it was not suspected that the impregnated ovum had reached as far

Fig. 1.—Specimen in Natural State.

Fig. 1.—Specimen in Natural State.



A, Omentum. *B*, Blood Clot (Omentum). *C*, Tube.
Implantation of Ovum on Omentum. Sketch showing the entire Gestation Sac.

Fig. 2. Implantation of Ovum on Omentum. Dissected Specimen.

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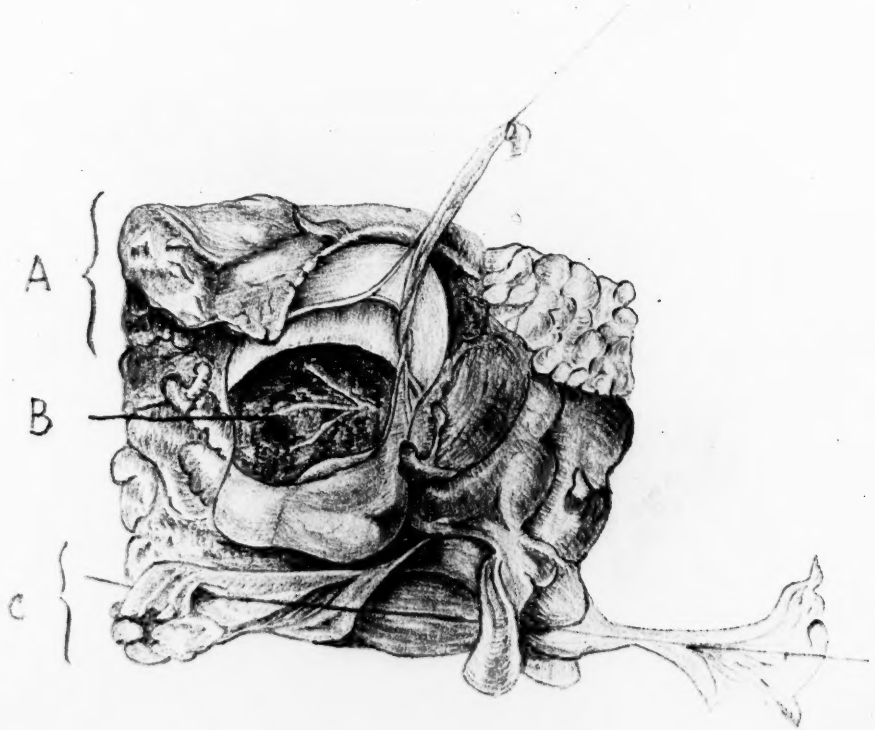

A, Omentum turned back to expose *B*, Amnial Sac.
C, Anterior Wall of Tube turned down.

as the oviduct. At the present time there are but a few observers who still believe in the existence of primary abdominal pregnancy; respecting this belief more will be said later on. It is sufficient to say now, that the majority of pathologists regard the presence of the ovum in the peritoneal cavity, as a secondary occurrence. It is nevertheless noteworthy that authorities differ as to the way in which the condition is brought about. Bland-Sutton states that when a living embryo is discovered in the abdominal cavity, it has found its way thither owing to secondary intra-peritoneal rupture of a broad ligament gestation sac. Tait, on the other hand, previously stated that "what had been called abdominal pregnancies are clearly exceptional cases, where primary tubal rupture at the end of the third month has not proved fatal; where the extruded placenta has made for itself visceral attachments wherever it has touched." This specimen is a perfect example of the process so well described by Tait. In comparison with most abdominal gestation sacs this one is small, and consequently the tubal condition can be easily studied. Where the case has gone to term, it cannot be expected that the deep-lying structures, such as the adnexa and tube, can be studied to advantage.

The ruptured tube itself presents several points of special interest. At its cut uterine end it is complete; then it is deficient above for the space of five centimetres, the amnial sac appearing to dip into the rent in the tube wall. External to the rent, the tube first assumes the appearance of a thin solid fibrous cord, whilst its terminal three centimetres are again pervious, the ostium abdominale opening at the base of a structure resembling a partially expanded lotus leaf. The closure of the gravid tube was not effected at the abdominal ostium as is usual prior to rupture; the obliteration of the lumen is 3cm. from that point. This closure of the canal has been brought about in a most unusual way. The tube looks as if it had suffered circumferential constriction by a cord or ligature. For this phenomenon I have no explanation to offer; as far as my own observations go it is unique.

Returning to the question as to the manner in which a living fœtus finds its way into the peritoneal cavity and continues to develop, there is no doubt that it can do, and usually does so, by rupture of a broad ligament gestation sac in which the fœtus happens to be uppermost and the placenta firmly attached below. It is equally certain, from a study of Dr. Routh's specimen, that the ovum may escape directly into the cœlomic space through a rent in the peritoneal coat of the tube. When a secondary abdominal pregnancy

is brought about in this way, it means that the fœtus finds itself in the peritoneum at a much earlier date than in cases where it passed first of all into the broad ligament and from thence into the abdomen. Its exit from the tube could not be postponed beyond the twelfth week, but it may remain within an intra-ligamentary sac until the fourth or fifth month. In the latter case the placental attachment at the bottom of the broad ligament is not disturbed, whereas in the former the placenta has to make its own implantation to the structures nearest the rent. Such attachments will be precarious, and the life of the fœtus will be in constant danger; therefore it is unlikely that such a secondary abdominal pregnancy will go to term, or, indeed, will advance beyond the fourth month without secondary rupture and the need for operation. The two cases will present widely different clinical features, especially with regard to physical examination. The intra-ligamentary pregnancy will occupy its own half, or more, of the pelvis, depress the vaginal roof, and displace the uterus to the opposite side, and after rupture the child can, as a rule, be distinctly felt in the abdominal cavity. In the case of primary intra-peritoneal rupture where the fœtus continues to live within the abdominal cavity, the swelling may at first be taken for a para- or peri-tubal hæmatocele, inasmuch as the tube and gestation sac will be in contact; but as the placenta continues to grow the tumour may rise into the abdomen, so as to occupy any position on its own side of the mid-line (*vide* Dr. Routh's note). On vaginal examination the fornices will be free, and the position of the uterus not necessarily disturbed or perhaps retroverted. I am disposed to think such cases as these are—to use Tait's expression—"exceptional;" at any rate, there is no similar instance among the many recorded cases of abdominal pregnancy found in the *Transactions* of this Society.

In addition to the above two different ways in which secondary abdominal pregnancy may occur, there is yet a possible third means by which it can be brought about. From a recent study of a case of incomplete tubal abortion, I was led to the belief that this accident may account for a secondary gestation sac in the peritoneum. In this case, already published in the fasciculus of the *Transactions* for the first half of this year, I found the amniotic sac containing a small crescentic body (?fœtus), lying outside the dilated ostium, free in a smooth-walled cavity. This cavity was formed partly by adhesions and partly by the posterior layer of the broad ligament. In addition to the amniotic sac it contained the ovary. There was no sign of hæmorrhage into this sac. The placenta was still in the tube

situated five centimetres from the ostium, and the umbilical cord connected it with the extruded and unruptured amnion. Had the placenta been attached to the ampulla instead of to the narrower part of the tube, the partial abortion would have given a chance for villi to have grown along the fimbriæ, and from thence to the neighbouring peritoneum, without at any time being sufficiently separated from the original site of implantation to cause fœtal death. There are therefore three possible ways in which second abdominal pregnancy may occur:—

1. As the result of rupture of a broad ligament gestation sac.
2. From primary rupture of the tube which has not proved fatal.
3. From incomplete abortion of an ampulla pregnancy.

The question remains: Is the condition ever primary? Can an ovum become impregnated before entering the oviduct? and can it, after conception, graft itself and grow on the peritoneum? We do not know the site where normal impregnantion takes place, but we do know that ovarian gestation is a fact, and that therefore it is not necessary for the ovum to have reached the tube in order to become gravid. The element of doubt appears as soon as we begin to discuss the chance of a fertilised ovum being able to exist and develop in the free peritoneal cavity. Whilst not prepared to deny the possibility of primary abdominal pregnancy, I cannot persuade myself that any case so described is genuine. In the *Trans. Obst. Soc.*, Vol. xxxiii., Doran gives an analysis of all the best reported cases of supposed primary peritoneal implantation of the ovum up to 1893, and the result of such scrutiny went to show that in no single instance was there proof that such a condition had been demonstrated. In 1896 Dr. Galabin showed a specimen of extra-uterine gestation at this Society, which, to my mind, is the most probable example of primary abdominal pregnancy yet published. It was referred to a special pathological committee, which suggested three alternative explanations—(1) that it might be the result of a tubal abortion, with fresh implantation of the ovum; (2) that it was possibly an ovarian pregnancy; (3) that more probably it was an example of primary abdominal (intra-peritoneal) gestation. I do not think an ovum would be capable of living after sudden complete tubal abortion, and quite agree with Dr. Galabin's remarks in the *British Medical Journal* (March, 1903), where he says that it is much more likely that a fresh and undamaged ovum would acquire attachments to the peritoneum, than an ovum injured by expulsion from the tube should do so. The other alternative, that of ovarian gestation, I cannot so readily dismiss from my mind, especially as the committee leave us

in doubt as to the relation of the ovary to the gestation sac, using in the description the words "what appears to be the right ovary." If ovarian gestation could have been more satisfactorily excluded I should have regarded the case as proved. Dr. Galabin lays great stress on the microscopical features of the sac wall, which, from its highly-organised state, he thinks could not have been lymph, but an investment corresponding to a decidua reflexa, or, as we should now say, a capsularis formed of peritoneum. I have not seen the sections, but the committee seemed to be of the opinion that the wall contained unstriped muscle fibres, which means that it had burrowed into the broad ligament, and this favours the ovarian theory and puts abdominal pregnancy out of court.

The doubtful points in this case seem to be (1) the relation of the ovary to the sac; (2) the nature of the sac wall. Exclude the ovary, and prove that the capsularis is nothing more than peritoneum, and we have an undoubted case of primary abdominal gestation.

In the *Zentralblatt für Gynäkologie* for January, 1903, Witthauer records a case under the heading "Primary abdominal pregnancy." This has been commented on in the *British Medical Journal* by Mr. Doran and Dr. Galabin, both writers accepting it as genuine. But, as I pointed out in an abstract of the case published in the *Journal of Obstetrics and Gynæcology of the British Empire*, Vol. iii., No. 3, p. 262, no information of the state of the left tube is given, and serial sections of the right tube were not made, so that the essential proof that the implantation was primary is wanting; indeed, the case is not nearly so carefully worked out as Dr. Galabin's.

Leiserung, as quoted by Witthauer, described an embryo sac as lying close to the sacrum, embedded in omentum, in the case of a cat. The ovaries and tubal ostia were proved to be healthy, but the omentum was adherent to the right tube at its uterine end, and on opening up the tube in this situation an old cicatrix was found into which the omentum had been drawn and had become adherent. This was, therefore, not a primary abdominal pregnancy, but the result of a ruptured tubal gestation, with secondary encapsulation in the meshes of adjacent omentum.

Bruno Wolff, in 1902, demonstrated an ovum which he found in the left side of the peritoneal cavity of a bitch, from which some months previously he had removed 2cm. of the right tube, and had sewn the cut ends together. Wolff believed this to be a case of primary abdominal pregnancy because of the intimate relations of the omentum to the ovum, but he could not, or did not, adduce any microscopical proof of his supposition.

In conclusion, the case which, to my mind, goes farther than any other in the matter of proving primary abdominal pregnancy to be a fact is that case already brought before the notice of this Society by Dr. Galabin.

A CASE OF FIBROMA OF THE OVARY.*

By EWEN J. MACLEAN, M.D., M.R.C.P. (Lond.), F.R.S. (Edin.),
Senior Gynæcologist to the Cardiff Infirmary; formerly Assistant Physician and Pathologist to the Chelsea Hospital for Women.

OVARIAN fibromata are rare. Pfannenstiel[1] gives their incidence as only 2 to 3 per cent. of solid ovarian tumours, and Bland-Sutton[2] terms them "pathological curiosities." On this point it has to be recognised that difficulty has not rarely been experienced in distinguishing this variety of tumour from sarcoma. Griffith[3] quotes Bland-Sutton: "It is important to remember that the majority of solid ovarian tumours classed in museums as fibromata are examples of sarcomata." He demurs to this statement as requiring further proof and adds: "It is at least certain that many tumours classed as sarcoma are really fibroma."

The age limit is a wide one. Hektoen and Riesman[4] give it as from 8 to 70 years but commonly between the age of 40 and 60. Doran[5] says that the disease is relatively frequent in youth, yet it may develop after the menopause.

Fairbairn[6] in his valuable paper on the subject points out that fibroma may involve the ovary in one of three forms. The first in which the whole organ is converted into a hard tumour, maintaining in some degree its original shape, but leaving no recognisable portion of its original structure. A second variety where the growth forms a hard tumour within the ovary spreading the tissue of the latter over its outer surface so as to encapsule the fibroma within the organ; and a third form in which the new growth is pedunculated from the surface of the ovary. Dr. Mary Dixon Jones has applied the term gyroma to a condition where the ovary becomes enlarged by the presence of one or more oval fibroid nodules within the organ, and which are believed to be developed from the corpora lutea.

Cystic and calcareous[7,9] degeneration may occur.

In its commonest form ovarian fibroma presents itself as a very hard, rounded, non-sensitive, unilateral, mobile tumour. It is of slow growth, but may attain to the size of the adult head or larger. Though the tumour does not open up the meso-salpinx, the pedicle is usually somewhat short. Apart from degenerative changes, adhesions with surrounding structures are uncommon. Ascites is not invariably present, though it

* Paper read before the Cardiff Medical Society, October, 1903.

occurs in a large proportion of instances. Thus Fairbairn[6] states that it occurred in one only of his seven cases, and Doran[5] in five out of eleven. The unaffected ovary is frequently small and infantile. They give rise to no especially characteristic symptoms. Cachexia is absent and the catamenia is usually unaffected. Bladder trouble with local pain and discomfort may be complained of. Torsion of the pedicle giving rise to urgent symptoms has been reported, and when lying in the pelvis, or especially when impacted in that cavity ovarian fibromata may, in common with other tumours, cause pressure symptoms and obstruction to delivery.[8]

The diagnosis cannot always be confidently made. Doran[5] says: "A markedly hard and painless tumour, moving separately from the uterus, in a very young woman, is most probably an ovarian fibroma." Pedunculated uterine myoma, the physical signs of which would most closely simulate this condition, is here, in Doran's judgment, excluded by the age reference. Dermoids, on the other hand, are very common in girls, but are not as a rule so uniformly hard and are more liable to be fixed by adhesions. Further, Doran notes that the hardest dermoids are usually associated with a considerable amount of pain. Sarcoma of the ovary, he adds, also relatively common in youth, is softer, of more rapid growth, and associated with cachexia and amenorrhœa. Too much importance should not be attached to the presence or absence of ascites.

The diagnosis of the condition as it arises in a young patient has been more particularly considered here, as it bears on the case the details of which are given in this paper. It will be noted that, in this case, there was no ascites and amenorrhœa had been present for twelve months antecedent to the date of examination.

F. B., single, æt. 17, was sent to me by Dr. Foley, of Abergavenny, and was admitted into the Cardiff Infirmary on July 29th, 1903, complaining of the existence of a hard lump in the lower abdomen, with pain and discomfort mainly referred to the left iliac region. In this region the swelling had been first discovered some 16 months previously, and was then estimated by the patient to be about the size of a hen's egg. In the meantime it had considerably increased in dimension, and the symptoms asssociated with it had practically incapacitated her for her duties as housemaid, the "dragging" pain, to use the patient's term, being at times very severe. Up to the date of admission there had been absolute amenorrhœa for 12 months, and for some time before that the catamenia, which had commenced at the thirteenth year, had been irregular, but not associated with pain or undue loss. There had been no leucorrhœa. Dysuria, without frequency of micturition, had been present for some six weeks. The general health and family history were good.

On examination the general condition was found to be good, and no abnormality was detected in the heart, lungs and urine. In the lower

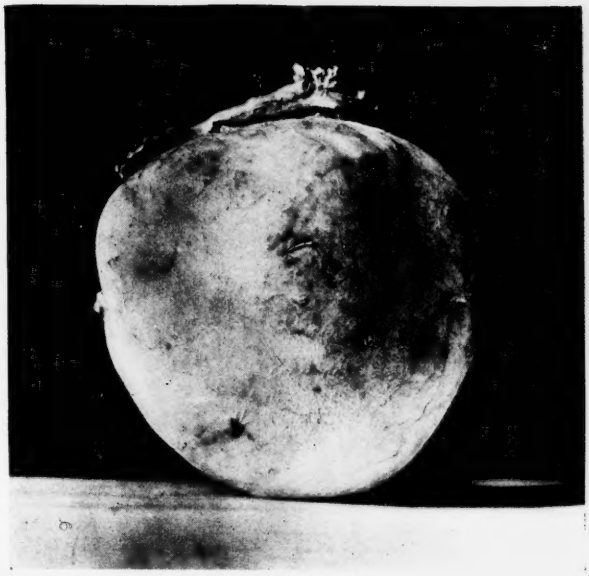

FIG. 1.—The tumour, as a whole, showing the generally smooth contour.

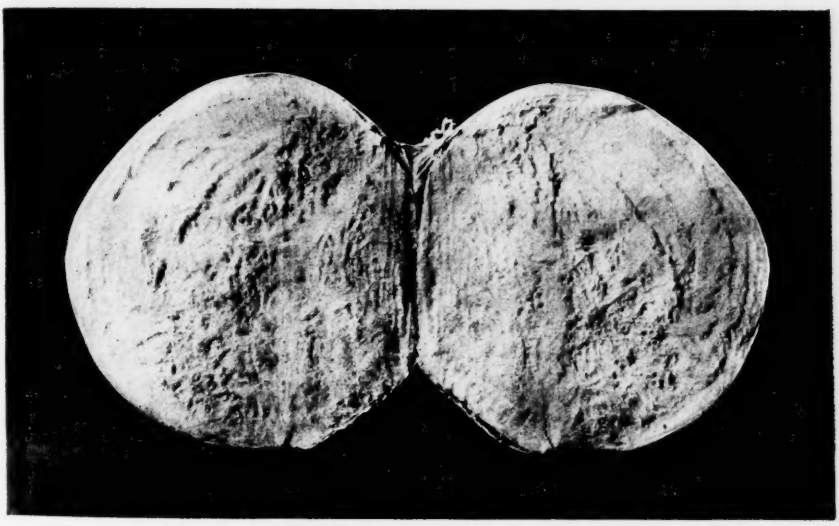

FIG. 2.—Tumour bi-sected, showing the fibrillated cut surfaces and the points where the capsule was more readily separable.

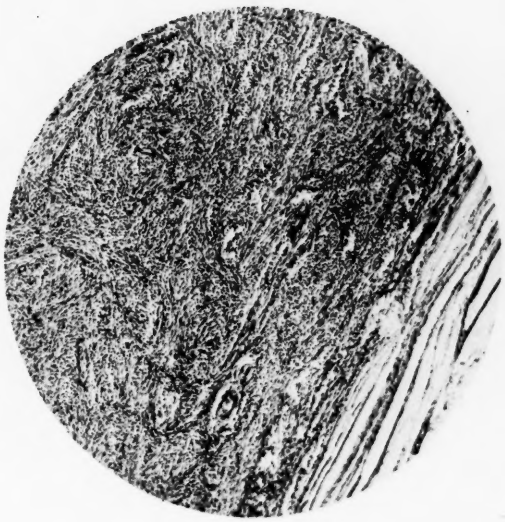

FIG. 3.—Micro-photo. × 55, showing the multi-layered fibrous capsule and blood-vessels in a densely interlacing fibrous stroma.

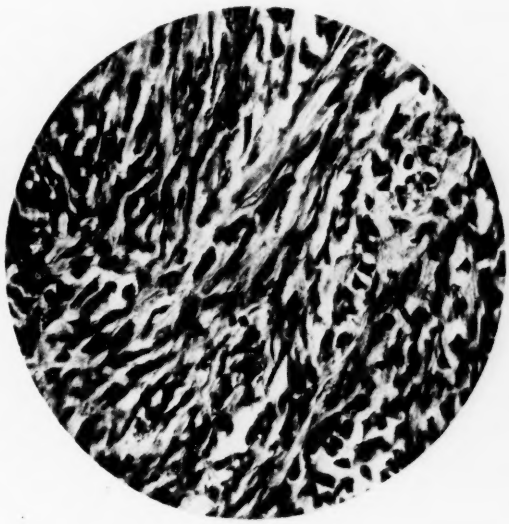

FIG. 4.—Micro-photo. × 400, showing the nuclei of fibrous bundles in transverse, oblique or longitudinal section; also connective tissue nuclei.

abdomen, rather more to the right than to the left of the middle line, a smooth very hard, rounded, non-sensitive tumour was to be felt rising out of the pelvis to within a couple of inches of the umbilical level, and about the size of a fœtal head at term. It was, to a limited extent, movable upwards and from side to side. Bimanually the tumour was found to occupy and depress the anterior and, to a lesser degree, the right lateral fornices. The somewhat softened cervix was directed downwards and backwards, and was displaced toward the hollow of the sacrum. The body of the uterus could not be satisfactorily outlined, but bimanual movement of the tumour was not imparted to the cervix, and the diagnosis of solid ovarian tumour was made. Abdominal section was performed on August 5th, the short pedicle secured, and this tumour of the left ovary removed. There were no adhesions and no ascites. The right ovary, which was infantile, and showed a ripe Graafian follicle on its surface, was allowed to remain undisturbed.

The patient made an uninterrupted recovery, and is now in good health, and has resumed her work.

Description of Specimen.

Macroscopic. The tumour (Fig. 1), which weighed 19½ ounces, was generally of pearl-white colour, of very hard consistence and irregularly ovoid form with smooth lustrous surface. (The surface of these tumours has been erroneously described by Kelly[10] and others as "covered with smooth peritoneum.") Small veins were visible coursing superficially in the growth and concentrating toward the hilum. In this region, also, some ill-defined nodules were apparent.

On bi-section (Fig. 2) the tissue of the tumour was found to be very dense and resistent to the knife, almost as much so as cartilage. Practically no blood followed the section. A well-defined capsule, which was evidently the thickened tunica albuginea, enveloped the whole, and was, for the greater part, in intimate connection with the underlying tissue. Toward the proximal pole, however, the capsule was readily separable, and was further divisible into several layers. The cut surfaces remained flat, and showed an intricate interlacing of fibrous tissue strands of dead-white colour, excepting a band, about an inch in width, which was pink-white and occupied a position corresponding to the paroöphoron of the ovary. There was no evidence, to the naked eye, of the presence of normal ovarian tissue, nor of cystic or other form of degeneration. The whole organ seemed to be transformed into a fibrous tissue tumour contained within its capsule. The circumferences were 12 inches by 13, and the diameters 4 by 4·2 inches. The portion of the tube and its related meso-salpinx removed with the tumour, were normal in appearance and calibre.

Microscopic. Fig. 3 shows micro-photograph ×55. The capsule was composed of several layers of dense, practically non-nucleated, fibrous tissue in roughly parallel arrangement. Underlying this a goodly number of blood-vessels, some with well-defined walls, in a stroma of closely interwoven bundles of liberally nucleated fibrous tissue. At points where the tissue was looser the fibrous network was seen to be supporting a cellular connective tissue. In deeper areas the blood-vessels were very scarce or absent.

Under the higher power (Fig. 4 micro-photograph ×400) the fibrous bundles seen in cross and longitudinal section showed their spindle,

elliptic and round nuclei. Also the branching nuclei of the connective tissue.

No search for muscle fibre by teasing out the tissue prior to microscopic examination having being instituted, the statement that no muscle was present cannot be definitely made. By the ordinary methods of examination, however, none was discovered, nor any sign of a Graafian follicle or cell-lined space.

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NOTES ON A CASE OF PRIMARY SQUAMOUS-CELLED EPITHELIOMA OF THE BODY OF THE UTERUS.*

By F. C. BATCHELOR, M.D., Dunedin, New Zealand.

THE specimen which I forward with these notes I take to be a primary squamous-celled epithelial growth of the body of the uterus. Cullen, in his work on cancer of the uterus (p. 579), writes:—"This is a very rare occurrence, only a few cases being recorded, the majority of which I have collected; of these quite a number are doubtful." . . . "It has not been our good fortune to see a case of this variety." After discussing reported cases he concludes: "From the foregoing it is seen that there are on record at least three, those of Gebhard, Kaufmann and Flaischlen."

I submit this specimen therefore to the notice of the profession, and would ask that expert pathological opinion be obtained as to its nature. The microscopic section of the growth was kindly prepared for me by Dr. E. Williams, of this town.

The history is as follows:—J. J., aged 64, married 44 years, widow for the past 12 years; six children, the youngest aged 27; climacteric 14 years ago. A stout, strongly-built, well-preserved woman, has always lived an active life hotel keeping on the West Coast of New Zealand; is temperate in her habits, cannot remember a day's illness, never requiring a doctor, even in her confinements. She complains of a stinking vaginal discharge which is occasionally blood-stained, sacral pains and uncomfortable dragging sensations in the pelvis and in the front and inside of the thighs. Her general health is fairly good, but has deteriorated during the past six months. The pain started about eighteen months ago; she first observed the discharge, occasionally blood-stained, six or eight months ago; there was a free loss of blood eight weeks ago during the night. She states that she first noticed the odour about six or eight weeks since, but her friends have observed it much longer. She has lost much flesh during the past year.

Vaginal Examination. There is an extremely foul discharge from the vagina, the vulval orifice is sore, excoriated and contracted. The cervix uteri is small and atrophied, but smooth and healthy.

Bimanual Palpation. The fundus is enlarged, but movable; the

* Read at a meeting of the Obstetrical Society of London, October 7th, 1903.

cervical portion is not so free in consequence of the contraction of the vaginal attachment. There is no definite thickening or deposit to be made out around the uterus. The sound passes beyond the notch, the interior of the uterus is rough, and blood comes away when the instrument is withdrawn.

Diagnosis. (*a*) Cancer of the body of the uterus; (*b*) senile endometritis with pyometra.

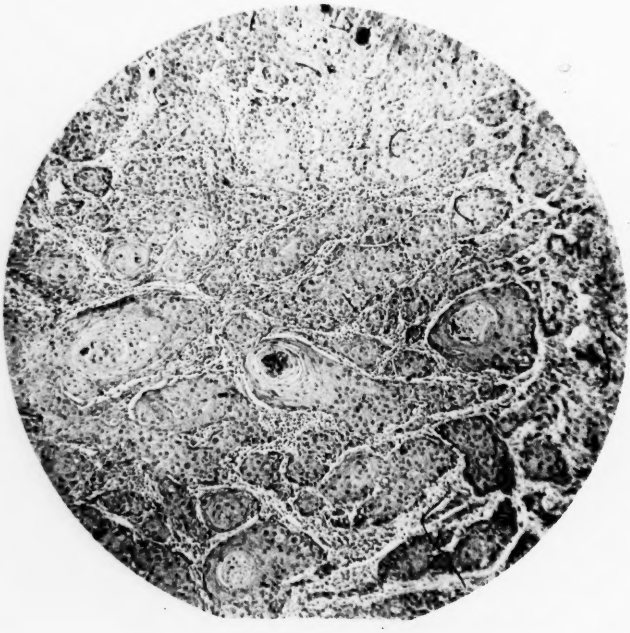
Operation, December 12, 1902. Ether administered, cervical canal dilated, about two ounces of stinking muco-purulent discharge escaped from the uterus. To the finger the whole of the interior of the body of the uterus felt rough, irregular, dense and hard. Hysterectomy was at once performed; the abdominal route was selected in consequence of the sclerotic changes making any vaginal manipulation very difficult. The operation was not easy, the abdominal walls being thick and the uterus low in the pelvis and held down by contracted vaginal attachments. The patient made an excellent recovery, leaving the hospital about a month after operation.

So far (Feb. 13th, 1903), she is keeping perfectly well, and her general health has improved.*

Dr. Cuthbert Lockyer examined the sections, and made a few more, reporting:—"The uterus from Dunedin shows origin of squamous epithelium in the gland tubules of the endometrium of the corpus uteri." Mr. Targett is of the same opinion. Another section through the endometrium and subjacent tissues at a spot where the morbid deposit was distinct to the naked eye, was made at the Museum of the Royal College of Surgeons, under the direction of Mr. Shattock. It shows well-developed squamous cells invading the deeper tissues, and there are a few distinct "nests." The cervix was atrophied and free from disease.

* The following paragraph was prepared by the Editor from pathological reports made in England at the Author's request.

Squamous-celled Epithelioma limited to the body of the uterus.



SOME NOT UNUSUAL OBSTETRICAL CASES AMONGST THE CHINESE.

By W. J. W. ANDERSON, M.D., *Superintendent of the Wesleyan Missionary Society's Hospital, Fatshan, near Canton, S. China.*

IGNORANCE is the parent of almost unbounded ills, but when one adds to ignorance no small amount of superstition, by so much are the ills the heavier. Again add prejudice to the other two, and one may perhaps imagine the state and condition in which many obstetrical cases in China, or at least this part of S. China, find themselves. Since I began medical work amongst the Chinese in connection with the Hospital at Fatshan, I have been amazed at two things:—1st, what a combination of the three above-mentioned forces can accomplish, and 2nd, and by no means the least, what extraordinary powers of recuperation and resistance the human body has, as illustrated in the Chinese. I propose to cite a few cases which are illustrative of the above points, and venture to say that if I had not seen with my own eyes, and examined with my own hands, I should have been as unbelieving as "Thomas, called Didymus."

CASE 1. Woman, age about 24. Called to see her after the fourth day of labour. She was a primipara. On arrival we found the woman in an exhausted condition, as so many native doctors or midwives had tried their skill. She was bleeding per vaginam. On examination the body of a child was discernable. It was hard at first to diagnose the presentation, as the part presenting was an empty shoulder joint. The arm had been pulled off. The child was dead, of course, and the smell was *not* pleasant. Version was performed, and the child delivered. The placenta was easily expelled, and there was very little bleeding after the vagina had been douched with quantities of hot water. Patient was in a critical condition, but rallied by next day, when she was admitted to the hospital. After admission a careful examination was made per vaginam, and the condition was as follows:—The vaginal mucous membrane was absent; it had been clawed out by the finger nails of a miserable old midwife. The muscles had been partly torn away as well, hence, of course, the slow bleeding, which turned out not to be uterine for the most part. The cervix was badly lacerated from the same cause, and there was a hole about half an inch in diameter behind the cervix in the posterior fornix, which went far beyond the reach of my finger; I never knew how far, as a post-mortem examination is about the last thing a Chinese will hear of. Patient developed a violent septicæmia, but, in spite of temperature running up to 105° or 106° almost daily, she lived ten days, and really found it quite difficult to die. I expected death daily for a week before that event actually took place.

Case 2. Woman, age about 26, multipara. Labour lasted two days before we were called. Fearful ulceration of right labium, due originally to swelling (œdema), which midwife thought would hinder the birth of child. Finger nails, $\frac{1}{4}$—$\frac{1}{2}$ inch long, soon worked dreadful havoc. Unfortunately, also she took away the vaginal mucous membrane of right side, and made a deep hole into the right sub-ramal region. After delivery patient was admitted to a ward in the hospital. She was in a desperate condition, and needed constant douches, but prejudice and superstititon could not be overcome. She would not be washed out per vaginam. It was "bad joss." She naturally developed puerperal fever severely, and in spite of all efforts, died after about eight days. Gangrene also supervened in the badly mauled parts.

Case 3. Woman, aged about 30, multipara. Uterine inertia due to contracted os. On arrival midwife was found using a dirty piece of stick to dilate the os, the same stick being used doubtless for various domestic purposes. Fingers and tearing had failed. Patient was dilated, forceps applied, child lived, and, in spite of septic fever, the patient finally recovered.

Case 4. Patient was about 30 years of age, multipara. Badly torn, on our arrival, by midwife, as the perineal body seemed, according to her idea, hard and resisting. She had torn almost from the vagina into the rectum. One of the great difficulties of the midwife was to break the "bag of waters." This she succeeded in doing finally with her finger nail, serrated with a knife, and a hair-pin with a spud at the end. This pin, carried in the hair by the Chinese women, is used also to scrape the ear. The "bag of waters" was the caput, and the baby almost bled to death because the gash in its head, which went to the bone, was so deep and long. Mother and child both recovered in hospital.

Case 5. A woman, about 28, was admitted to the wards of the hospital. She was sent to me by a former student, a man who had been trained in western medicine for six years, and who now has his little opposition hospital in Fatshan. He had been called in after the woman had been in labour 20 days. He found her terribly exhausted, badly œdematous, nearly dead for want of sleep. Numbers of women had been asked to "try a hand" in delivering the child. They had all failed. As a last resort they called in a native "western healing doctor." Unfortunately, although this worthy gentleman "guaranteed a cure," neither the cure nor the delivery came off. After treating her for four days with non-success, he asked me to admit her to the wards. This I did, fully expecting the woman to die before morning. It was then 8 p.m. I found on examination that she was intensely distended with gas; every now and again a little gas escaped per vaginam with a gurgle. The smell was awful. She was cyanosed, almost pulseless at wrist, and too feeble to cry out. She was propped up on a pile of dirty clothes, and when I went to examine her, her husband was on the bed with her. I promptly had the woman washed and her vagina douched, and made an examination. The os was torn; a foot was now presenting. I proceeded to dilate the os, bring down the foot, and look for the other foot. I soon saw that the abdomen must be evacuated, and this was done. The diaphragm also had to be pierced, and finally the head was evacuated, and the child, in pieces it is true, was delivered. The right arm was missing, it had been previously extracted. The child had been dead many days. The placenta was adherent, and rather

difficult to peel off. The uterus was copiously washed and vagina also, and ergot given hypodermically. Patient had fever 103° for four days, which gradually subsided. The seventh day she sat up in bed, and with "medicine water" (Jeyes' fluid) was persuaded to wash her hands and face. On the tenth day she went home to attend to her young children. About one week after her arrival at home, I heard she developed tetanus and died in three days. Her husband was unwilling to bring her back to us, we had made her (and him) wash so much.

This was really an extraordinary case, and illustrates what this long-suffering people can stand. I always regret that Tetanus, of which there is not a little in this part, should have carried her off.

Case 6. Was a woman, of about 30, multipara. Of fairly good family. All the previous confinements had been easy. We were called to see her after labour had been on three days. She was in an almost dying condition from hæmorrhage. Presentation was transverse. The os was fully dilated, and the hand was easily admitted to the uterus. Podalic version was performed, and a dead child extracted. Placenta, which was rather low down, was adherent in upper segment, and was a little difficult to remove. After delivery bleeding ceased, but patient was constantly fainting. Strychnine and digitalin was injected hypodermically, and rice water gruel given as patient could take it, by the mouth. The third day she was carried down to hospital, and lay like a corpse for one week, scarcely ever moving, never speaking, passing water and fæces into the bed, white and anæmic to a degree. Pulse 120—140; temperature never below 101°, and often 103°. We gave up all hope, and expected her death every minute. We gave her food, beef juice, fish, chicken, broth every hour or so. Frequent douchings, quantities of water per rectum, strychnine, digitalin, and occasional doses of strophanthus hypodermically. Hot water bottles constantly renewed. After about seven days she began to take interest in things, she would herself turn over in bed, and was evidently making new blood fairly rapidly. Temperature gradually came down, her appetite returned, and she began to grumble that we did not give her "number one good" medicine. In three weeks, in spite of everything, she went home entirely recovered, also protesting that "if the doctrine of Jesus made doctors who could save life when she had been dead so long it was worth having!"

These are only six of scores of cases. They are not cited because they are the worst, they are not so, but the details are clearly stamped on my mind and are easy to detail. They certainly illustrate what ignorance and supersition can do, and what prejudice against us, "Foreign devils," as we are called, can effect when we try to offer and carry out our Western ideas of treatment. The amazing thing is that, when so many such cases occur, so few die. Scores have high septic fever, and I have seen them lie for days scarcely moving and beyond all my hopes, yet in spite of all get better and go home.

REVIEW OF CURRENT LITERATURE.

OBSTETRICS.

A Case of Pregnancy in a Dwarf Weighing Thirty-nine Pounds.

WILLARD (W. G.). *Amer. Journ. Obstet.*, Sept., 1903.

THE patient was a woman, aged 40. At birth she weighed eight pounds, and was to all appearances a healthy infant. She was breast fed. When seven weeks old the first of a long series of fractures took place whilst she was being bathed; this was a fracture of the femur. After this she had from two to four fractures every year, until they numbered 54 in all. She stated that her parents finally became tired of doctors and splints and simply bound up the fractures themselves. Until her fourth year she was able to stand, when supported by surrounding objects, but since that time had never been upon her feet. Menstruation commenced at the age of 15, and was regular until marriage. In July, 1902, she was married to a blind man, 35 years of age; after marriage she menstruated only once, and in August and September had slight morning nausea. She was seen by Dr. Willard in December, 1902. She had the appearance of a rachitic dwarf with extreme deformity of the pelvis and extremities. The abdomen contained a globular elastic tumour lying more to the right than to the left side, and reaching to a point mid-way between the umbilicus and sternum. Fœtal movements were felt, the fœtal heart could not be heard, the breasts presented the usual changes of pregnancy. The cervix was softened, but could only be reached by feeling round a projecting angle of bone, the outcome of a fracture of the acetabulum, and projection inwards of the head of the right femur. All the limbs were deformed in a most remarkable manner. The pelvic measurements were as follows:—

Distance between ant. sup. spines	18 cm.	
Distance between iliac crests	20 „	
Distance between tubera ischii	4 „	
External conjugate	12½ „	
Diagonal conjugate	6½ „	
Transverse diameter of cavity	4 „	
Height of patient (with feet touching floor)	71 „	(28½ ins.)

The patient had chronic bronchitis; her breathing was rapid and laboured, and speech somewhat difficult from this cause and from the crowding up of the diaphragm by the enlarged uterus. Delivery,

even at that time (five months) per vias naturales was out of the question, and postponing operation until the child was viable was deemed impractical on account of the dyspnœa. The uterus and its contained fœtus was therefore removed through an abdominal incision. The patient made a good recovery.

HERBERT WILLIAMSON.

Blood Changes during Pregnancy and the Lying-in.

CARTON (PAUL). *Annales de Gynécol. et d'Obstét.*, September, 1903.

DURING the last month of pregnancy the following blood changes may be noted:—A leucocytosis varying between 8000 and 15000, an increase of red discs, while the polymorphonuclears vary between 70 and 80 per cent. At the moment of birth a polymorphonuclear leucocytosis occurs; this is more marked in primiparæ than in multiparæ. An increase of red discs also occurs, but with considerable diminution of eosinophiles. These may completely disappear during the period of expulsion. The leucocytosis of labour is progressive, it begins with the onset of the pains, or even a day or two before, and attains its maximum at the moment of expulsion of the fœtus.

In the lying-in period the polymorphonuclear leucocytosis falls rapidly during the first 24 hours, or at least during the second and third day. The number of red discs is also diminished for two or three days, but eventually recovers itself. From the third to the sixth day a faint eosinophile reaction is present which averages 3·5 per cent.

In twin pregnancy much the same changes occur, but at the moment of birth the leucocytosis is more marked, and during the lying-in the eosinophile reaction averages as much as 6·2 per cent. Death of the fœtus or maceration *in utero*, causes a fall in the polymorphonuclear leucocytosis. The birth of dead or macerated children as a rule leads to the same modifications of the blood count as in normal cases. In the lying-in period in such cases, an eosinophilia may occur of even 9 per cent.

Puerperal infection is characterised by a polymorphonuclear leucocytosis, the intensity of which may give an indication of the gravity of the case. The three stages, viz., polymorphonuclear leucocytosis, lymphocytosis, and eosinophilia, can be observed in such cases. Recovery is signalised by a fall in the curve of white cells and polymorphonuclear leucocytes, and by the appearance of

basophile and eosinophile elements. Daily observations of this sort should always be undertaken in septic cases, as they not only help in establishing a prognosis, but may even guide us in our treatment.

C. Hubert Roberts.

Glycogen in the Liver during Pregnancy, the Puerperium and the Period of Lactation.

Burlando (E.). *Archiv. Italiano di Ginecologia*, August, p. 246.

The writer has made some observations on rabbits with a view to ascertain the effect of pregnancy, parturition and lactation on the glycogenic function of the liver. In pregnancy he found there was a marked increase in the amount of glycogen. During lactation there was a rapid progressive diminution in quantity, the diminution being proportionate to the time that had elapsed since parturition. If the animals did not suckle their young the slight diminution in the amount of glycogen caused by parturition was slowly made up.

R. W. MacKenna.

Ovarian Pregnancy.

Micholitsch. *Zentralblatt für Gynäkologie.* No. 42.

Micholitsch, of Vienna, describes two cases of ovarian pregnancy which were obtained in a series of 120 operations for extra-uterine gestation.

In the first case the patient was 32 years of age. She had a normal labour five years before. The specimen was obtained on removal of the right appendages by anterior colpotomy. The patient recovered. The specimen consisted of a tumour the size of a small apple, quite separate from which was the tortuous but otherwise normal right Fallopian tube. Section of the tumour proved it to be a blood mole surrounded by a white capsule. The mole contained an empty cavity the size of a hazel nut. The capsule looked like ovarian tissue to the naked eye, the microscopical investigation proved it to be so, and further demonstrated the presence of amnion and also chorionic villi. The most careful research on the tube showed no signs of tubal pregnancy.

The second case was that of a woman aged 23 years, a primipara. By anterior and posterior colpotomy, an ovarian tumour, the size of a fist, was removed from the left side. The left tube was normal, the

right appendages were in no way altered. Section of the tumour proved it to be a blood-mole, within which was an empty amnial cavity. The mole was surrounded peripherally by a thin layer of ovarian tissue, which at one spot—the site of rupture—was wanting; here the wall was worn away. Microscopical proof as to nature of the specimen was obtained in this as in the last case. No explanation as to how the ovum had become embedded in ovarian tissue was forthcoming.

CUTHBERT LOCKYER.

Four Cases of Uterine Fibroids Complicating Pregnancy.

BUÉ (V.). *L'Obstétrique*, September, 1903.

THE author states four cases in detail. No. 1 was that of a primipara 24 years of age, admitted to hospital on account of severe hæmorrhage at $8\frac{1}{2}$ months of her pregnancy. The placenta was felt *per os* and the case was considered one of placenta prævia; after delivery, in giving an intra-uterine douche, a fibroid was felt on the posterior uterine wall. This tumour was thought to have caused the faulty insertion of the placenta. No. 2 was a iv.-para, with a large tumour, in the fourth month of pregnancy. When the abdomen was opened a large fibroid was found, and at the same time the uterus was seen to be studded with small fibroids. Supra vaginal hysterectomy was accordingly performed and the pedicle was treated extra-peritoneally. No. 3 was a ii.-para who, in the second month of pregnancy was operated on for removal of a subperitoneal fibroid by Dr. Pozzi; although it contained several small fibroids the uterus was not removed. The pregnancy resulted in miscarriage in the fifth month, with hæmorrhage so considerable as to require plugging of the uterine cavity. Case 4 is that of a primipara, aged 36. Early in her pregnancy the presence of a fibroid was diagnosed on the posterior uterine wall close to the cervix. It was about the size of a hen's egg, and though it increased to the size of a large orange during the pregnancy, it gave little trouble during labour as it rose out of the pelvis. Three months later the tumour was easily enucleated.

Dr. Bué discusses the differential diagnosis at great length. He emphasises the importance (as does also M. Bonnaire in the same number of *L'Obstétrique*) of an examination *per rectum* while the uterus is drawn well down by forceps. Among many other sources of error the author refers to hydatidiform mole, in which the uterus

is sometimes very irregular, with soft patches and hard nodules simulating a uterus with multiple fibroids, some of which are becoming cystic. His diagnostic in this sort of difficulty is the presence of uterine contractions which exclude fibroids and are diagnostic of pregnancy; unfortunately this does not cover the case of pregnancy *and* fibroids.

In cases of difficult labour the presence of fibroids on the posterior surface as a cause of delay may be suspected if, without other obvious cause such as pelvic deformity, there should be malpresentation or frequent changes of presentation, or non-engagement of the presenting part, or protrusion of the fœtus above the pubes, or extreme flexion of the unengaged head. This cause should more especially be kept in view if the presence of small fibroids on the anterior uterine wall can be diagnosed.

E. H. L. Oliphant.

Thyroidectomy as an Emergency Operation in Pregnancy.

Fellenburg (Rudolph von). *Zentralblatt für Gynäkologie.* No. 42.

Dr. von Fellenburg, speaking from Swiss experience, says pregnant women who are suffering from goitre are not infrequently subject to severe dyspnœa either at the end of pregnancy or even earlier. These attacks may lead to actual suffocation and endanger the lives of mother and child. Two instances are given:—

1. A married woman, aged 32 years, had a goitre which was principally situated to the left of the middle line, but there was a growth on the right side which proceeded from the isthmus of the thyroid. This growth caused slight dyspnœa so that the patient was admitted a month and a half before the date of the confinement. A fortnight after admission, whilst getting on to a couch for examination, the woman suddenly showed signs of suffocation. A rapid attempt to drag up a lobe of the gland, which, on the left side, was compressing the trachea at the thoracic inlet, was fruitless. Before a knife could be fetched to perform tracheotomy, the patient stopped breathing, and became unconscious, and was in a state of profound asphyxia. Without any preparation or cleaning of parts, an incision was made from thyroid cartilage to sternum, the trachea was found flattened out against the spinal column; tracheotomy seemed impossible. Kocher's rectangular incision was carried out on the left

side of the neck, and the compressed lobe rapidly drawn up, and a few deep veins clipped; then artificial respiration was started, and when the patient's breathing was restored the tumour on the left side was removed, whilst the swelling on the right side, which had caused no compression, was not disturbed. Labour-pains started a day after the operation, they subsided, and labour came on one month later and ended in the birth of strong twins. The patient left hospital in good health sixteen days after child-birth. N.B.—The thyroid wound healed well in spite of the fact that no antiseptic measures were taken; it was drained and allowed to close slowly, complete closure taking three weeks.

2. The second case was that of a primipara aged 24 years, with bilateral thyroid enlargement. The swelling was not great, but it burrowed deeply into the thoracic inlet. When admitted the patient was eight months pregnant. There was no dyspnœa at that time. About three weeks later an attack of asphyxia suddenly came on in the night, whilst the patient was out of bed; the woman fell to the ground and she was found in a state of unconsciousness with stertorous breathing. The trachea was pushed to the right and was scabbard-like in shape. Kocher's incision was made on the left side, the growth on both sides was removed, and a small piece of isthmus was saved. All this was done without disinfection of patient or operator's hands. Glass drainage tubes were placed on either side at the lower angle of the wound; five grains of thyroid extract were given, first four times, and then thrice daily. Labour-pains started on the evening of the operation, and a full-term female child was born thirty-six hours later. There was some recurrent hæmorrhage in the wound as the result of the strong labour pains, and suppuration occurred, but no rise in temperature. The sinus caused by the drainage tube closed three and a half weeks after the operation and the woman left hospital with no signs of pressure on the trachea.

The writer states that in neither of these two cases was tracheotomy advisable because of the great swelling of the isthmus, and he mentions a case where excision of the thyroid had eventually to be performed after tracheotomy had failed to relieve the dyspnœa. Under the urgent circumstances the question of danger from sepsis did not weigh with the operator, who felt that the patients had all to gain and nothing to lose. In an emergency where suitable instruments cannot be obtained for complete extirpation of a thyroid growth, the writer thinks luxation of an impacted lobe might be performed and the tissue wrapped in an antiseptic dressing for the time being, this being better treatment than tracheotomy and cer-

tainly preferable to Cæsarean section. To guard against tetany, some portion of the functional gland should be left behind.

CUTHBERT LOCKYER.

The Hydatid Mole and the Chorionepithelioma.

SFAMENI (PASQUALE). *Giornale Ital. d. Sc. Med.*, Nos. 5, 6, 7, and 8, 1903.

SFAMENI brings forward some novel views on the nature and relations of the hydatid mole. He believes that the vesicles of the hydatid mole are neither due to dropsy nor to myxomatous degeneration of the chorionic villi; they represent an entirely distinct new formation or neoplasm derived from the epithelial covering of the villi alone. The central core of these villi is not constituted of connective tissue, but of epithelium, degenerated or in process of degeneration. The fluid in the vesicles is not the product of the secretory activity of the epithelial investment, but is the result of the liquefaction of the epithelial elements. This liquefaction begins at the centre and passes outwards till it reaches the epithelial covering. The existence of metastatic moles Sfameni regards as due, not to the villi or the vesicles being carried to other parts, but to the transference of true syncytial buds or gemmules. If these views be correct, it is evident that the hydatid mole is brought more than ever into line with the chorionepithelioma.

J. W. BALLANTYNE.

Labour in Transverse Positions of the Head.

JARDINE (ROBERT), M.D. *The Scottish Medical and Surgical Journal*, October, 1903.

THE author contrasts the mechanism and mode of treatment in the anterior and posterior parietal presentations respectively. The mechanism described is that usually found in modern text-books. The line of treatment recommended is as follows:—Be careful to estimate the size of the head relative to the pelvis through which it has to pass, and decide as early in labour as possible what your line of treatment is to be. If the disproportion between the head and the pelvis is great and the child is alive, Cæsarean section should be done as soon as possible. If a slight increase of the size of the pelvis only is required, symphysiotomy should be selected. If there is a reason-

able chance of delivering a live child through the ordinary passages and the presentation is an anterior parietal one, wait a reasonable time to allow the head to mould and then apply axis-traction forceps. If you fail with the forceps and the fœtal heart is strong do a symphysiotomy, but if the child is dead do a craniotomy. In a posterior parietal presentation do version as soon as the os is fully dilated, and if the after-coming head becomes impacted perforate it. Dr. Jardine records a case of posterior parietal presentation which he failed to deliver by forceps but successfully delivered by turning. This case, together with the fact that he has frequently failed with forceps in posterior parietal positions, although the disproportion between the heads and the pelvis was not greater than in many of the successful cases of anterior parietal presentation, leads him to regard the line of treatment suggested by him in these two positions as sound.

JOHN T. HEWETSON.

The Treatment of Placenta Prævia.

BRAUN VON FERNWALD. *Wiener. Klinische Rundschau*, 1903. No. 35—38.

THE management of severe cases of placenta prævia is discussed on the basis of an extensive personal experience. The first occurrence of severe hæmorrhage should be the signal for the immediate induction of labour. This is best carried out by efficient tamponade of the cervix and vagina with iodoform gauze. It may be necessary to repeat this more than once. The disadvantages of repeated tamponade are (1) the pain that is produced, and (2) the possibility of injuring the vagina and cervix and so predisposing to infection. The colpeurynter has been widely used. It is readily introduced and removed if required, and in many cases it has a very striking effect in softening the cervix and obliterating the canal. If this succeeds and the cervix is then dilated the head should be allowed to come down. If, however, uterine contraction is deficient or absent, version should be performed. The author condemns attempts at version when the os only admits two fingers. It is difficult to carry out, and if accomplished the traction on the leg almost invariably causes deep laceration of the cervix.

Under these circumstances it is preferable to dilate the cervix by the colpeurynter or tamponade, and to maintain the strength of the patient by transfusion of saline fluid, etc. Rapid delivery in the

absence of uterine contraction is liable to be followed by severe or even fatal hæmorrhage either from the uterine cavity or a deep laceration of the lower segment. If version is decided upon, an attempt should be made to carry it out by the external method which is often successful if the membranes are unruptured. If this fails the hand must be introduced. The extraction of the head requires great care to avoid laceration. If the child is dead volsella may be placed upon the leg to facilitate traction (Stratz). In *placenta prævia centralis* the writer prefers to separate the placenta from the lower segment until the edge of the membranes is reached. It has been held by some that there is a risk of air embolism in this procedure. This, however, is very slight. Air embolism is usually produced by the occurrence of negative pressure in the uterine veins. This may occur during version, or from sudden evacuation of the liquor amnii in the absence of uterine contraction. This should certainly be avoided if possible. Too rapid extraction of the child may also be followed by dangerous collapse.

In order to diminish the high mortality of the children, Dührssen has advocated early rupture of the membranes, and the introduction of the hydrostatic dilator into the uterus combined with manual traction on it during the pains. This method has been widely adopted by Kustner, Pinard, Stratz and others, with an average mortality to the children of 61 per cent. (Strassman). It is certainly advisable to rupture the membranes before introducing the bag, as otherwise the placenta must be widely separated, and the risk to the child much increased. The use of the colpeurynter is not without danger of laceration of the cervix, and the writer records an example fatal from rupture of the lower uterine segment. In this case, however, the *autopsy* showed fatty degeneration of the uterine muscle. Braun von Fernwald is opposed to the use of mechanical dilators, such as Bossi's instrument, owing to the certainty of producing deep cervical laceration. The method of *accouchement forcé*, as advocated by Marx, of New York, who recorded 40 cases treated successfully, all the children surviving, cannot be recommended for general adoption.

In spite of the multiplicity of therapeutic agencies in the treatment of placenta prævia, the author believes that occasionally Cæsarean section is the most rational treatment. It may be required in some cases of extreme rigidity of the cervix, which resists all the usual methods, and hæmorrhage cannot be checked, the child being at full term and living. If attempts at delivery be persisted in, rupture of the lower segment of the uterus, with severe or even fatal

hæmorrhage may occur, and the life of the child is almost inevitably lost. He records a case of this nature in which the cervix was torn up to the retraction ring; the patient, however, fortunately recovered. Two cases are fully recorded in which Cæsarean section was carried out successfully for mother and child. In both, however, the uterus contained multiple myomata, and hence Porro's operation was performed. It would seem probable that in these cases the myomata were responsible for the deficient uterine action, and continued hæmorrhage. Vaginal Cæsarean section may be occasionally required, more especially if there is reason to suspect infection of the uterus; in this case the organ should be removed. In all other circumstances the abdominal route is preferable.

Hæmorrhage after delivery of the child in placenta prævia may result from partial separation of the placenta with deficient uterine action, or from laceration of the lower uterine segment. If bleeding continues after removal of the placenta the cervix must be seized with strong volsella and drawn down to the vulva. This has a powerful effect in checking hæmorrhage, by traction on the uterine vessels. The tear may now be sutured. If, however, bleeding is severe the author has in several cases separated the cervix from the vagina in front, opened the pouch of Douglas, and placed long clamps on the lower part of the broad ligaments. These are most effectual and may be removed in 24 hours. Henkel has recently advocated and practised the placing of strong volsella forceps high up in the lateral vaginal fornix on each side, with the object of compressing the uterine artery. This is very effectual, but there would appear to be some risk of damaging the ureter. This has, however, not yet been observed, but further experience is necessary before this plan can be recommended with confidence. If these methods of checking hæmorrhage are adopted removal of the uterus will rarely, if ever, be required.

ARNOLD W. W. LEA.

The Surgical Treatment of Puerperal Infection.

BOLDT (H. J.). *Amer. Journ. Obstet.*, Sept., 1903.

THE chief question which is discussed in this paper is the advisability of extirpation of the uterus in certain cases of puerperal sepsis. Such grave surgical intervention should be considered only in those cases in which the source of infection seems to be limited to the uterus, and in which other forms of treatment have proved of no avail.

In reviewing the cases of puerperal infection reported in the literature as cured by means of hysterectomy the author is struck by the fact that comparatively few are convincing. We must bear in mind that sometimes cases which appear to be hopeless recover, and we have not yet reached such a degree of proficiency that we can say from the result of an examination of the secretions or of the blood that the patient is suffering from a definitely limited form of sepsis, and even should the local examination lead to the conclusion that the uterus is alone infected and that parametric tissues, peritoneum ovaries and tubes are free from induration, still this does not invariably indicate that the uterus should be removed. The author has had under his care patients whose blood gave pure cultures of micro-organisms, but because their general condition did not justify such grave surgical interference he relied entirely on other methods of treatment, and they recovered. On the other hand, he has had patients from whose blood numerous cultures were made with a negative result, and yet a number of them died with the clinical picture of blood poisoning. On *post-mortem* examination blood from the large vessels and scrapings from the peritoneal surface usually showed a streptococcic infection. No rules for surgical interference can be formulated; it is entirely a matter of personal judgment. "I know of no other disease in the domain of surgery in which the physician is placed in an equally responsible position in forming the indication for a major surgical intervention. . . . I have operated on patients ill with a puerperal infection, the condition becoming more serious despite other treatment adopted, one or more chills having been experienced by the patient, the blood showing micro-organisms, but my patients promptly died whether vaginal or abdominal hysterectomy had been performed. Then I operated upon a number of patients where the clinical picture left no doubt as to the seriousness of the infection, but the blood showed a negative result, but they also died. In all these instances the source of the deadly infection seemed limited to the uterus. Sections of these uteri showed that streptococci had invaded the muscular structure for some distance, but none were found to have traversed it as far as the peritoneal covering." There are, however, instances of puerperal infection in which hysterectomy is indicated, namely, such patients as have decomposing placental structure in the uterus that cannot be removed through the natural channel. Such instances are extremely rare. The operation is also indicated by the presence of suppurating and sloughing fibromyomata. It is further indicated in instances of septic metrophlebitis, if it is possible to make the diagnosis of this

condition, and with the proviso that the general condition still justifies the operation. Whether the hysterectomy should be done by the abdominal or vaginal route must be determined by the local conditions. If it is possible to remove the organ without serious mutilation *per vaginam* that method should be the one of choice, but if the organ be too large or the vaginal canal too narrow the abdominal route should be chosen.

HERBERT WILLIAMSON.

Thinning of the Lower Uterine Segment with Unruptured Membranes: A Contribution to the Etiology of Spontaneous Rupture of the Uterus.

GOLDNER. *Monats. für Geburts. und Gynäk.* Bd. 18, Ht. 4.

ALTHOUGH Bandl's theory serves as a rule to explain most cases of thinning of the lower uterine segment, there may be found a series of cases, in which thinning occurs with unruptured membranes, which Bandl's views do not satisfactorily account for. The authorities do not make clear where physiological stretching ends and pathological thinning begins. There is some difference of opinion as to whether a contraction ring develops in normal birth or not. Frommel and Schauta agree that a contraction ring does form at a height above the symphysis, which varies from 2—4cm. On the other hand Herlitzka contends that there is no contraction ring and no thinning in normal labours, but that on the contrary the lower segment also actively contracts. According to Schauta the contraction ring only rises as high as the umbilicus in cases of obstructed labour. This is not quite satisfactory because the position of the umbilicus is variable and may be much nearer the symphysis in some women. In general abnormal thinning of the lower segment is associated with multiparity, contracted pelvis, transverse presentations, large children, cicatricial contractions, etc. In primiparæ rigidity of the cervix may be added to all these causes. In general these conditions lead to premature rupture of membranes, and as a rule no danger is apprehended as long as the membranes remain intact. There are many cases in which dangerous thinning of the lower segment has occurred, in which none of the foregoing anomalies were present, and in which also the membranes were unruptured. Schauta and Braun agree that thinning may occur with unruptured membranes and also that rupture of the uterus may occur. Kilian published in 1841 the first case of ruptured uterus

with expulsion of the fœtus in unruptured membranes into the abdominal cavity. Jenkins, Hofmeier, Simpson, Braun, Jurinka and von Frascani publish similar cases. These have been described as spontaneous rupture, and it cannot but be a question of great importance how the membranes can bear such a pressure as would rupture the uterus without themselves giving way. In all these cases there was no cause found, such as the Bandl theory requires for dangerous thinning of the lower uterine segment. The author describes 19 cases with unruptured membranes out of 321 in which thinning of the lower uterine segment occurred. Of these 19 cases 17 were in primiparæ, and the majority were at the most favourable period for reproduction, namely between the ages of 20 and 25. In none of these cases could any cause be found which would lead to atrophy or destruction of the uterine musculature, and in no case was the child of very large proportions. In only seven of these cases was the head found high above the pelvic inlet, and in three only of these seven was there any serious contraction of the pelvis. Deficiency of liquor amnii was found in nine cases, the amount being below 300 grammes, a figure which corresponds with Fehling's view that 265 grammes represents the least quantity of liquor amnii found at a full-term birth. Three of these cases occurred in combination with contracted pelvis, and so there remain six cases in which no cause whatever for thinning of the lower segment could be found. On the other hand the membranes in all these cases were abnormally tough and so it must be concluded that the combination of deficient liquor amnii and tough membranes may lead to thinning and rupture of the uterus before the cervix dilates. In 15 of the cases the contraction ring could be felt as high as the navel, in the other four not so high. This could be felt externally and in 10 cases was proved by internal examination immediately after labour and in one case was seen during the operation of Cæsarean section. Deficiency of liquor amnii does not allow the bag of membranes to protrude normally, and so there is but little dilatation power exerted by the membranes. Especially is this the case in primiparæ in whom the cervix is relatively more difficult to dilate. Thus the force of the uterine contractions is expended in stretching the lower uterine segment without dilating the os uteri. According to Spaeth, Naegele, G. Braun, Müller and Schröder deficiency of liquor amnii is of very little importance, and is not held to be a cause of thinning of the lower segment. According to Olshausen, in cases of such deficiency artificial rupture of the membranes is indicated, and Jaquet mentions five cases of protracted labour in

which no thinning of the lower segment was observed, and in which labour speedily ended after artificial rupture of the membranes. In five of the author's cases labour was accelerated by simple rupture of the membranes; nine times forceps were applied, twice craniotomy and once Cæsarean section were performed.

In conclusion the author submits that the combination of deficiency of liquor amnii and tough membranes especially in primiparæ, may be quite sufficient cause for dangerous thinning of the lower uterine segment and rupture of the uterus, quite apart from the usual causes of this accident.

THOS. G. STEVENS.

How much Milk should a Healthy, Full-term Infant obtain from the Mother's Breast?

PERRET (M.). *L'Obstétrique*, September, 1903.

NOT satisfied with the figures given in the books in answer to this question, M. Perret has investigated the matter for himself. His results relate only to healthy, well-grown children during the first few days of life. The child should be fed at regular and fixed hours, and ten times in all, each 24 hours. His figures are as follows:—

1st	day	following	birth,	nil.					
2nd	,,	,,	,,	160	grammes	or 15—20	grammes	at each	meal.
3rd	,,	,,	,,	285	,,	25—30	,,	,,	,,
4th	,,	,,	,,	360	,,	35—40	,,	,,	,,
5th	,,	,,	,,	430	,,	40—45	,,	,,	,,
6th	,,	,,	,,	470	,,	45—50	,,	,,	,,
7th	,,	,,	,,	490	,,	45—50	,,	,,	,,
8th	,,	,,	,,	500	,,	50	,,	,,	,,
9th	,,	,,	,,	515	,,	50—55	,,	,,	,,
10th	,,	,,	,,	540	,,	50—55	,,	,,	,,

From the third day to the tenth a child weighing 3 kilos should steadily gain till it reaches 3·3 kilos.

E. H. L. OLIPHANT.

Artificial Feeding of Infants.

HUTCHINSON (ROBERT). *Lancet*, Sept. 19th, 1903.

DR. HUTCHINSON recapitulates the chief points dealt with in his address as follows:—

1. The first essential in the artificial feeding of infants is to have a definite plan upon which to go and to avoid haphazard procedures.

2. Diluted cow's milk, condensed milk, and peptonized milk may be regarded as the positive, comparative and superlative of digestibility respectively, and should be tried in that order until the digestive power of the child is suited, due regard being paid to the details of administration above laid down.

3. Periodic weighing of the child is the only test of the success or failure of the food selected.

4. In cases in which even peptonized milk fails to give good results great benefit often follows the administration of grey powder even in cases in which there is no reason to suspect a syphilitic taint.

5. In spite of all care in the use of the above methods there remains a residuum of cases in which progressive wasting persists. Many of these seem to be babies who are unable to digest the casein of cow's milk in any form.

6. In such a case one should try to procure a wet nurse for the child, and failing that one must eliminate casein from the diet by making whey the basis of the feeding mixture.

7. The use of a patent food as the sole article of diet for a baby is rarely if ever necessary so long as cow's milk can be obtained either fresh or condensed.

8. If a child is unable to digest much cow's milk it is often worth while to try the effect of adding a little starchy food to the diet even at an early age, for inability to digest milk appears to be sometimes accompanied by an unusual capacity for the conversion of starch.

JOHN T. HEWETSON.

The Etiology of Ophthalmia Neonatorum.

MORAX. *Annales de Gynéc. et d'Obstét.*, August, 1903.

THE author points out that under this heading a series of infections must be grouped together, and that although gonorrhœal infection is responsible for half of the cases observed during the first eight days after delivery, still a large number remain of which the exact cause is uncertain. Pinard has already formulated the doctrine that there is not one but many varieties of ophthalmia neonatorum. With regard to gonorrhœal ophthalmia our knowledge is more or less precise; it is due to the gonococcus, and to direct contact of the conjunctiva with the maternal secretions. The signs of ophthalmia generally come on during the first three days. Very rarely purulent conjunctivitis may be demonstrated at birth, but such cases occur with prolonged labour or with premature rupture of the membranes. In cases where the symptoms are delayed till

the eighth day of delivery, the author supposes that a variation exists in the virulence of different gonococci.

A case of gonorrhœal ophthalmia coming on after the eighth day is rare, unless it be due to infection from the mother or nurse who may be suffering from gonorrhœal discharges. Non-gonorrhœal ophthalmia most certainly occurs in newly-born children, and it is to such cases that the author draws particular attention. The microscopical examination of the pus and of the cultures is often negative, or other microbes may be demonstrated. In fact, in such cases, the diagnosis may be said to depend on the absence of the gonococcus.

The author supposes the infection to be spontaneous or metastatic and similar to that occuring in the adult. Clinically, non-gonorrhœal ophthalmias are variable in their onset, and as a rule most of them come on after the seventh day. The secretion is less abundant than in true gonorrhœal ophthalmia, it is usually catarrhal and does not tend to accumulate in the conjunctival sacs in such abundance as in gonorrhœal cases. One eye may be affected after the other within very variable limits of time. Grave lesions of the eyes in non-gonorrhœal ophthalmia are uncommon.

Bacteriologically various organisms are found in non-gonorrhœal ophthalmia, such as the pnuemococcus, streptococcus, or the bacillus of Weeks. In many cases no organisms occur at all, or we are ignorant of the microbe which causes the infection. Syphilitic conjunctivitis appears to be of rare occurrence.

The author thinks that at present any definite conclusion as to the etiology of non-gonorrhœal ophthalmia is premature, and further, that there is no evidence at present that such cases are necessarily due to carelessness on the part of the midwife or nurse. If Pinard's dictum is to hold, that such cases are due to secondary infection and the result of carelessness on the part of the midwife or nurse, then the compulsory notification and preventative treatment of cases of ophthalmia neonatorum will become a matter of increasing difficulty.

C. Hubert Roberts.

Procreation of Sexes According to Will

d'Haenens (Ant.). *Le Progrès Médical Belge*, Sept. 15th, 1903.

The article deals largely with observations and experiments made by F. Guiard to prove the procreation theory of Professor Thury, of Geneva, who says that the sex is determined by the stage of

evolution of the unfertilised ovum in relation to the fusion of the male element. If the spermatozoid meets the ovum before it has reached a certain degree of maturity the result will be a female embryo; if the ovum is fertilised after it has passed a certain degree of maturity the resulting embryo will be a male. A great agriculturalist experimented on cows in order to test the accuracy of this theory. If he wished a female calf he put the bull to the cow on the first day of her rut; if he wished a male, he put the bull to the cow on the third day of her rut. Out of twenty-nine experiments the sexes came as he desired in the whole 29 cases. Similar success was obtained in experiments on sheep. At the Agricultural Institute of Proskau ten cows were put to the bull on the first day of the rut; of these five had heifer calves and five had bull calves. Six cows were put to the bull on the second day of their rut; five of them gave birth to bull calves and one to a heifer calf. It is generally accepted that the most active period of fertilization in the human subject is the four or five days following menstruation. It is equally certain that fertilization may occur a few days before menstruation, during menstruation and up to 10 to 12 days after its cessation, so that there is practically 15 to 20 days during which fertilization may occur. Such a period permits of perfect maturity of a shed ovum. The assumption is that if fertilization occurs three or four days before the period, the result in all probability will be a girl, and if fertilization occurs three or four days after the period the result will in all probability be a boy. It is necessary for the testing of such a theory that one act of sexual intercourse should be permitted, or that such intercourse should be confined to a single day.

Guiard claims to have had exact experiments in thirty-five cases. In thirty-one of these the law of Thury was proved. In the other four sufficient precautions were not taken in the direction of a single intercourse to make the result reliable. It must be remembered that spermatozoa can survive for four or five days in the female generative passages, and in this way considerable miscalculation may occur. If such a theory is correct it is needless to point out that underlying it is a very important social question full of the most practical interest not only to parents but also to the state.

In the same article the special resemblance of a child to one or other parent is dealt with and a theory to explain it is propounded. From what has already been said the law of Thury claims that the unfertilized ovum has a female (or early) phase, and a male (or late) phase of evolution. The exact point where the female phase passes into the male cannot be exactly determined. Now if the spermatozoid

reaches the ovum very early in its female phase it will of course be a daughter, but that daughter will resemble its father because the maternal part is not so developed when fertilization occurs. If fertilization occurs late in the female phase, the daughter will partake more of the characteristics of the mother. Similarly if fertilization occurs early in the male phase, the resulting boy will resemble his father, and if occurring late in the male phase, the boy will resemble the mother.

JOHN T. HEWETSON.

GYNÆCOLOGY.

Primitive Permanent Amenorrhœa in a Multipara.

SOLI (T.). *La Clinica Ostetrica*, June-July, p. 249.

THE writer reports the case of a country-woman, of 34, who had never menstruated, but had given birth to several children. Her father died of heart disease, her mother of puerperal fever. She had one brother alive and healthy, but no sisters. She had not had any of the exanthemata of childhood, nor was she rachitic. She had never menstruated, nor felt any of the symptoms that precede, accompany or follow the catamenia. When 15 years of age she had broncho-pneumonia and hæmoptysis, which was thought to be possibly vicarious menstruation. She was treated with ergot and iron for two months, and there was no further bleeding. At the presumptive period of puberty she had no general symptoms, such as usually mark that epoch; there were no menstrual molimina, no leucorrhœa or vicarious hæmorrhage. At 22 she married, and in about nine months gave birth to a living and healthy male child. Her pregnancy parturition and puerperium were all normal. Pregnancy followed pregnancy with intervals of from 9 to 14 months between each birth. She suckled each child for the usual period. Of seven children four were still alive and healthy, three having died in infancy from the ordinary diseases of childhood.

The writer first saw her in July, 1902. She was then about five months pregnant, and had come to hospital because for about a month the abdomen had become very rapidly distended in an unusual way. On examination she was found to be a well-developed woman, with no evidence of bone disease. The pleura, lungs, abdominal organs, kidneys and heart were all normal, as was also the blood, both as

regards the number of its corpuscles and its richness in hæmoglobin. The thyroid was slightly enlarged, but her voice was normal in strength and pitch. The breasts were well developed. The abdomen was globular, and the epigastric fossa was obliterated. On palpation there was a uniform sense of resistance, and fluctuation was very distinct. No fœtal parts could be felt, nor could the fœtal heart be heard. The uterus was as large as at the eighth month. The external genitals were of normal development. On vaginal examination the fornices were felt bulging, but not excessively. The cervix uteri was soft. Strong pulsation was perceptible in the vagina, and ballottement could be felt. The pelvis was normal. The abdomen continued to enlarge rapidly, and it became apparent that the case was one of acute hydramnios. As there was no possibility of gestation continuing to term, and as the uterine distension was producing marked dyspnœa, it was decided to induce labour. This was done, and twins were extracted. There were two sacs; in one the liquor amnii was very scanty; from the other over eight litres of fluid escaped. Both children were alive when born, but died in a few minutes. The puerperium was normal. There was a single placenta, with several white infarcts on the maternal surface. There was one chorion, but two *amnia*. There were two cords, one implanted centrally and the other at the margin of the placenta. Sixty days after parturition the writer had an opportunity of examining the patient again. He found that the uterus, tubes and ovaries were of normal development.

Hippocrates, Pliny, Cuvier and authorities in all ages have held that a woman who has never menstruated cannot conceive. In 1586 Marcellus Donatus recorded two cases of pregnancy in women who had never menstruated. Some years later Joubert, Stark and Themmen reported analogous cases, and since that time several authenticated cases have been put on record, though the condition is undoubtedly of great rarity.

R. W. MacKenna.

Grape-like Sarcoma of Cervix Uteri.

Curtis (H. J.), B.S., F.R.C.S. *Med. Press and Circular*, July, 1903.

Child, æt. 12 months, had suffered from vaginal discharge and swelling of abdomen for six weeks. Blood escaped from orifice of hymen and was seen to come from a fungating mass in the vagina. Abdomen was distended and on palpation a large round tense tumour

was felt rising up out of pelvis in middle line, and reaching a point midway between the ensiform cartilage and the umbilicus. The child cried most of the day, especially if abdomen was examined; bowels were regular; there was considerable respiratory difficulty. Laparatomy revealed a large smooth tumour rising out of the pelvis and covered entirely by peritoneum except at one small point where the growth seemed to be breaking through. The growth appeared to spring from the base of the uterus. The fundus and appendages sprang from the anterior surface of the growth just below its summit. Uterus and bladder being freed, the tumour with uterus and part of vagina was rapidly removed. The child survived the operation and lived nearly twenty-four hours. No secondary growths were found at the *autopsy* except a mass of growth situated in the region of the left iliac lymphatic gland, and surrounding the left common iliac artery. The tumour appeared to originate in the region of the cervix and vagina, into the cavity of which numerous grape-like growths protruded.

Microscopical sections were made with the following results:— Piece of infiltrated cervix shows a diffuse spread of spindle and round cells (sarcomatous) associated with well marked œdema. Grape-like growths are covered with a superficial layer of columnar epithelium, then a layer of flattened epithelium. The stroma contains numerous mixed spindle and round sarcomatous cells. The whole growth is very vascular and very œdematous. Infiltrated vaginal wall is covered by stratified epithelium below which is a stroma rich in round and spindle cells. Secondary growth in or near the left iliac gland consists of round and spindle cells which surround the thrombosed left common iliac artery.

JOHN T. HEWETSON.

The Removal of Ovaries, inflamed or affected by Tumour Growth, by Vaginal Cœliotomy.

HEINSUIS (FRITZ). *Beiträgen zur Geburts. und Gynäk.*, von A. Hegar, Bd. 7, Ht. 1.

DURING the last $3\frac{1}{2}$ years 600 colpotomies have been performed in the Greifswald Klinik. In 110 of these cases it was found necessary to remove a part of or the whole ovary. Such treatment was always performed from a conservative standpoint. Inflamed ovaries were only removed in those cases in which the severe general condition of patient justified the operation or where normal ovarian tissue was no

longer present. In the remaining cases curative treatment was tried by separation of the adhesions, punctures of the follicles, re-section of the tubes, and the formation of a new abdominal orifice. In 25 cases resection of the ovary, according to Martin's method, by retaining the tissue of the ovary still capable of functionating, was performed. In two of the cases a posterior colpotomy was performed because of the protrusion of the posterior fornix by the swelling, but in the remaining cases anterior colpotomy was performed. In the latter operation the view obtained of the viscera is better than in the former. The viscera appear in their normal position, and the posterior surface of the uterus and pouch of Douglas are easily accessible, and it also affords a means of correcting a malposition of the uterus by vaginal fixation.

Concerning the operation, only the points in which it differs from that of other authorities require to be noted, namely, longitudinal incision in the anterior vaginal fornix, and loosening of the vaginal wall right and left. After opening the peritoneal cavity and drawing forwards the uterus by means of vulsella (Kugelzangen), the tubes and ovaries are exposed according to Martin's method, which consists in passing a small swab on a pair of forceps along the posterior surface of the uterus, and pushing it under the adnexa, which are then levered forwards by lowering the handle of the forceps. At the end of the operation, vaginal fixation of the uterus is performed, and at the same time the peritoneal cavity is closed. In order to prevent prolapse of the bowels during the operations, good anæsthesia is required, and a movable operation table, by means of which the buttocks can at any time be raised higher than the head. Finally the bowels are replaced by a large swab or piece of gauze fixed to a pair of forceps.

In abnormal narrowness of the vagina, Schuchardt's incision can be made. During the whole operation there is continuous douching of the field of operation with normal saline solution. In all cases access is easy and the examination of the viscera a complete one. Injuries did not occur more frequently than in a laparotomy. In one case, total exstirpation of the uterus had to be performed owing to severe perimetritis. In another case in which there was an ovarian tumour with twisted pedicle, a laparotomy was subsequently performed. Of five fatal cases three were suppurative. The total number of colpotomies performed by Martin is 1,600, of which 264 were vaginal ovariotomies with a mortality of 3·3 per cent.

In special cases and where the technique is good, the vaginal is undoubtedly a slighter and less severe operation than the abdominal.

E. Scott Carmichael.

The Control of Hæmorrhage following Pelvic Operations by Packing the Pelvis with Gauze through a Proctoscope, and maintaining Counter Pressure by Packing the Vagina.

Sampson (John A.). *Bulletin of the Johns Hopkins Hospital*, Sept., 1903. Vol xiv., No. 150.

The outhor claims the following advantages in the use of the proctoscope:—

1. Frequently a diagnosis can be made in obscure cases, the lower end of the abdominal wound being easily opened in the first 48 hours and the insertion of the proctoscope giving rise to little pain or shock, whilst a second operation in the case of broken cardiac compensation or a commencing pneumonia might mean certain death.

2. Hæmorrhage in cases of free venous oozing from the floor of the pelvis, and which cannot be stopped by ligature or clamps, or where the use of ligature or clamps is contraindicated on account of the danger of injuring the ureter or making the condition worse, can be easily and certainly controlled by packing the pelvis through the proctoscope.

3. It has a considerable advantage over the cylindrical packer in use a few years ago on account of its obturator.

The author lays great stress on lifting up the cervix when the vagina is packed, a proceeding which will of itself stop bleeding from uncontrolled uterine vessels, and he points out that the gauze packing should be put in beneath and posterior to the cervix for this purpose, and also that the vagina should be packed very tightly so as to compress the vaginal veins. Four cases are reported—two of post-operative bleeding where the patients were so ill that further operative procedures would have been in all probability fatal They both recovered. One where internal bleeding was excluded by passing the proctoscope into the pelvis and examining the pelvis and field of operation; and one where there was severe hæmorrhage on the eighth day from an amputation of the cervix which was controlled by packing the vagina.

Comyns Berkeley.

Exostoses of the Pelvis.

Daniel (Constantin). *Annales de Gynéc. et d'Obstét.*, Aug.-Sept., 1903.

The author discusses the question of pelvic exostoses, reviewing the bibliography of the subject at some length. He concludes that under

this heading we should only include osteogenetic exostoses, or exostoses of growth. This is also the teaching of Dupuytren and Broca. Inflammatory and trophic pathological conditions of the pelvic bones and those due to new growths, must be excluded. The enormous tumours formerly known as exostoses have been proved to be osteo-sarcomata, and belong, of course, to the category of new growths. Little seems to be known of the etiology of true osteogenetic exostoses, but rickets, syphilis, tuberculosis, and rheumatism have been invoked as causative factors. Tuberculosis, according to Lejars, Brun, Poumeau, and others, has been observed affecting individuals with exostoses, or their antecedents. Heredity seems to play an important part, and exostoses frequently occur in members of one particular family. More recently certain conditions of the nervous system have been supposed in some way to be connected with the growth of these tumours.

True exostoses always arise from the points of junction of the constituent bones of the pelvis, or from their primitive and complementary points of ossification. Whether they arise from the long bones or from the pelvis, they grow only during the period of growth of the bony skeleton itself; when this is complete the exostoses also cease to grow. Exostoses of the long bones in a woman should suggest careful examination of the pelvis, especially in relation to pregnancy. Skiagraphy in such cases should always be employed. As regards diagnosis, this may be easy when the exostoses are multiple, but solitary ones may often be overlooked. True exostoses may be mistaken for osseous spines occurring in rickety pelves. Such spiny growths, however, generally occur along the ilio-pectineal line, the sacral promontory, the pelvic crest, and the borders of the iliac fossæ. Cody, Leopold, and Neugebauer have carefully described these "bassins épineux." Fractures of the pelvis may sometimes be mistaken for exostoses. In such cases vicious union or large masses of deformed callus may lead to considerable or dangerous narrowing of the pelvic cavity. Hypertrophic osteitis may also be confused with an exostosis, and sometimes leads to much deformity.

Ossification of the cartilages of the pelvis, as described by Vailée, is another condition to be thought of in diagnosis. Such tumours, however, are not true exostoses. An exaggeration of the sacro-vertebral articulation in contracted pelves may also be mistaken for an exostosis.

With regard to such malignant growths of the pelvis as osteo-sarcoma, carcinoma, and enchondroma, the huge size, rapid growth, and general condition of the patient, should enable us to establish a

diagnosis. True exostoses on the other hand, always commence to grow during infancy, they grow slowly, and their evolution is coincident with the growth of the whole skeleton. Again, true exostoses are often symmetrical, and they never attain any great size. Prognosis is a very important question in pelves which are the seat of exostoses. The tumours themselves are innocent, but they may have very serious effects upon labour, so much so that if discovered in a virgin, marriage and the risk of childbirth may be justly forbidden. Their bad influence in labour is great, malpresentations are common especially if the tumours occur in the true pelvis, and they frequently lead to difficult or obstructed labour. Similarly, in the lying-in stage the results of a difficult delivery may be followed by serious complications. Severe injuries to the fœtal head are not uncommon during delivery.

Treatment in such cases depends on the amount of deformity. In some cases labour may be spontaneous, but when the true pelvis is seriously involved symphysiotomy or Cæsarean section may be necessary. Skiagrams should, if possible, always be taken beforehand. Daniel agrees with Pinard that it is not justifiable to induce premature labour. When labour begins the following conditions must be carefully considered:—(*a*) The contraction is slight, and spontaneous delivery appears possible; (*b*) the contraction is well marked and spontaneous delivery is thought impossible; (*c*) the contraction is severe and spontaneous delivery out of the question. In the first case, it is best to wait until complete dilatation of the cervix, and then if the head becomes fixed to practise symphysiotomy. Champetier de Ribes' bag may be used when the membranes rupture prematurely, or when there is delay in dilatation of the cervix. In the second case, after using de Ribes' bag, the author advises symphysiotomy. Lastly, where the obstruction is hopeless, wait till labour comes on, and then perform Cæsarean section, followed, if necessary, by removal of the uterus. Where the child is dead when labour begins, embryotomy should be performed as true exostoses of the pelvis never attain a great size, and extraction of the child *per vaginam* after this operation is always possible.

C. Hubert Roberts.

REPORTS OF SOCIETIES.

OBSTETRICAL SOCIETY OF LONDON.

Meeting, Wednesday, October 7th, 1903, EDWARD MALINS, M.D., *President, in the Chair.*

Mr. JOHN D. MALCOLM read a paper on

An Operation for Extra-Uterine Gestation between the Third and Fourth Months of Gestation, with Removal of a Living Fœtus and much Trouble from Hæmorrhage during Convalescence.

(Vide p. 435.)

Dr. CUTHBERT LOCKYER contributed a paper on

A Case of Ruptured Tubal Gestation, in which the Ovum continued to Live for about Four Months, the Gestation Sac becoming Implanted on the Omentum.

(Vide p. 471.)

Dr. HELLIER brought forward the report of

A Case of Abdominal Pregnancy, Secondary to Partially Ruptured Pregnant Tube.

An interesting discussion then took place on these three papers.

Dr. HERMAN thought the Society was to be congratulated upon the papers read before it that evening, the authors of which deserved its thanks. He thought Mr. Malcolm had treated the case he had related to the Society very wisely; and he agreed with Mr. Malcolm in his recommendation that operation should be performed without unnecessary delay in all similar cases. But Mr. Malcolm went further than that. He extended his recommendation of prompt operation to all cases of ectopic pregnancy, in which the fœtus was living, whatever the period of pregnancy, In this he (Dr. Herman) could not agree with him. In the first half of ectopic pregnancy certain dangerous events were frequent—rupture of the tube or of the gestation sac, and their ulterior consequences. At this period the placenta was small, its area was so limited that it could be satisfactorily dealt with. Even at this period, as Mr. Malcolm had shown, hæmorrhage often gave great trouble. But in the second half of ectopic pregnancy the conditions were different. The further the pregnancy went on the more vascular was the placenta, so that bleeding was greater and the larger was the area of the placenta, so that the difficulty of stopping bleeding was greater. Mr. Malcolm had quoted Dr. Champneys' compilation of cases, made in 1887, and showing a mortality of 88 per cent. Among cases of ectopic pregnancy operated upon at or near term while the

fœtus was living, he (Dr. Herman) was not aware of any considerable number of cases published since, which showed much reduction of that mortality. Before proceeding to this dangerous operation they should consider what would happen if the operation were not done. When the patient had reached the second half of ectopic pregnancy the liability to rupture of the sac was a thing of the past. Dangerous accidents of any kind were rare in the second half of ectopic pregnancy. When the patient got to term spurious labour came on, and at this time the patient was in practically no danger. Then the child died, the liquor amnii was absorbed, and, finally, after an interval, the length of which we as yet know not exactly, the placenta became thrombosed. The patient was, as a rule, in no danger until suppuration took place; and the cases collected by Parry showed that the time at which suppuration began varied from a month to two years, and was upon the average about six months. Suppuration might not occur at all, and the patient remain in good health to the end of a long life, subject only to the inconvenience of an enlarged abdomen. She was in no danger until suppuration began, and if operation were postponed until this date the placenta would almost certainly be thrombosed, and it could then be easily peeled off without hæmorrhage. He had exhibited to the Society (*Trans.*, Vol. xxviii., p. 141) specimens from a case illustrating this. He therefore could not agree with Mr. Malcolm that immediate operation should be done in the second half of ectopic pregnancy with a living child; he thought that by far the safer course was to wait until symptoms of suppuration had begun.

Dr. Victor Bonney was interested in the papers he had listened to because within the last few months two similar cases had come under his own notice. In the first a two months tubal gestation had ruptured within the broad ligament and formed a large sac, into which bleeding had occurred during a period of six weeks. In the second case the patient, after missing two periods, was suddenly seized with severe pain, accompanied by some loss and followed by the passage of a uterine cast. The bleeding was slight, and was followed by another two months' amenorrhœa. An examination four months after the beginning of pregnancy revealed all the signs of a typical extra-uterine gestation; indeed, the placenta could be felt in the pouch of Douglas by vaginal examination.

Both these two patients were subjected to operation by Mr. Bland-Sutton, and an enormous retroperitoneal collection of blood was found in the first, whilst from the second a perfect and unruptured secondary abdominal sac, containing a living fœtus of between four and five months was removed with a successful result. In this latter case the removal of the placenta was followed by very free bleeding. He considered that in the question of the advisability or not of removing the placenta at once in cases such as this last one, there were two main points to consider—firstly, the period to which pregnancy had advanced; and, secondly, the mode of placental attachment in the particular case under consideration.

Dr. Amand Routh said that the case so ably commented upon by Dr. Lockyer had proved a very disappointing one. The patient had had three attacks of collapse from internal hæmorrhage with nine weeks' amenorrhœa. The diagnosis of extra-uterine gestation was made fron the history and the physical signs. It was assumed that it was a secondary intra-peritoneal pregnancy after tubal rupture, owing to the tumour being entirely distinct from the retroverted uterus. At the operation the placenta was found to be already separated on its central maternal

surface, and adherent at several parts of its circumference to omentum and broad ligament. After its removal there was a profuse general capillary hæmorrhage from all the underlying structures. This was at once arrested by firmly applied gauze pressure. As the anæsthesia passed off incontrollable vomiting ensued, and she died of exhaustion in 24 hours. Dr. Routh asked for the experience of those present regarding the persistent amenorrhœa in this case and the one mentioned by Dr. Victor Bonney, instead of the usual metrorrhagia. Was it peculiar to these cases of secondary intra-peritoneal pregnancy?

Dr. Heywood Smith wished to ask Mr. Malcolm whether, in his case, he had used adrenalin for the arrest of the hæmorrhage, as he (Dr. Smith) had found both it and tincture of matico of great service in such cases of oozing after separation of adhesions.

Mr. Malcolm, in reply to Dr. Herman, said that if an operation was performed, as advised in his paper, whenever an extra-uterine fœtation is diagnosed, and the fœtus was believed to be alive, undoubtedly cases would be operated upon, which would get well without operation, as, for instance, such a case as that recorded by Mr. W. R. Watkins in the eighth volume of the *Transactions* (p. 106), in which a patient died at the age of 74, having carried the remains of a full-time extra-uterine fœtation in her abdomen for 43 years. At the *post-mortem* examination the abdominal parts were slightly adherent to the maternal tissues. But Mr. Malcolm contended that if the operation proved very difficult and dangerous during the life of the fœtus it would be more dangerous if delayed until suppuration took place, or if it had to be performed for severe hæmorrhage. He allowed that different views might be taken, but it seemed to him that under all circumstances delay in operating was likely to give occasion for the development of more dangerous conditions.

In the cases referred to by the second speaker, it had been possible to seize the torn parts with forceps, when, of course, the arrest of hæmorrhage was comparatively easy. In Dr. Routh's case the great difficulty was that it was impossible to seize the bleeding tissues in forceps, and there was no point of counter pressure, as in a case where an extra-peritoneal sac existed, and could be packed firmly. With regard to the development of a true abdominal pregnancy arising outside the tube and outside the ovary, Mr. Malcolm thought this was quite possible. All that was required for the development of the ovum seemed to be a free supply of blood, and that could be had from the peritoneum.

Mr. Malcolm thought that Dr. Taylor's deductions from observations made during an operation performed in 1896, and recorded in the *Society's Transactions*, explained the method of development of extra-uterine fœtations most satisfactorily. Dr. Taylor taught that so long as the amnion did not rupture, and the supply of blood to the placenta was sufficient, the fœtus in the amnion might develop anywhere to full term.

Dr. W. E. Batchelor brought forward a case of *Primary Squamous Epithelioma of the Body of the Uterus*, which was commented upon by Dr. Cuthbert Lockyer and Dr. Stevens.

Dr. Herbert Spencer showed a specimen of a *Degenerated Uterine Fibroid*, threatening to rupture, removed by total abdominal hysterectomy.

Mr. Targett exhibited a specimen of *Keratising Carcinoma of the Uterus*.

Dr. Sikes demonstrated a method of taking *intra-uterine bacteriological cultures*, and showed an unusual form of succenturiate placenta.

BRITISH GYNÆCOLOGICAL SOCIETY.

Meeting, October 8, 1903, Dr. Heywood Smith, *President, in the Chair.*

Dr. Heywood Smith showed the following specimens, reading notes of the cases:—(1) *A Large Fibroid Tumour in calcareous degeneration,* removed from a sterile married woman still menstruating though 50 years of age; the ovaries were cystic, and were first removed; an elongated pedicle, attaching the tumour to the fundus, was ligatured and divided, and as the uterus was found to be studded with fibroids a supra-vaginal amputation was then performed; the tumour was everywhere permeated with calcareous matter, and there was much difficulty in making a section of it. (2) *Pyosalpinx (?Gonorrhœal) Enlarged and Cystic Ovaries and Parovarian Cysts.* (3) *Sclerotic Ovaries* from two cases, each marked by menorrhagia and dysmenorrhœa, but the ovarian envelope in the one was smooth, in the other corrugated like the surface of the brain.

Dr. H. Macnaughton-Jones showed specimens of (1) *Cirrhosis of the Ovary.* (2) *Degenerating Fibroma,* from a patient approaching the menopause. (3) *Microscopical Section of Duct-Carcinoma,* from an isolated encapsuled growth deeply buried in the adipose tissue of the axilla; no other gland was involved. The mamma of the same side, weighing over 3lb., was subsequently removed, but displayed no trace of malignancy. (4) *Uterus and Cyst of the Broad Ligament,* removed on account of recurrent hæmorrhage from a patient who had previously undergone two cœliotomies for cystic disease of the ovaries and broad ligament, and who had regained good health. (5) *Temperature Charts and Tumour,* from a case in which an apparently perfect convalescence after hysterectomy in a woman of 55 was interrupted on the 20th day by necrosis of the stump and cellulitis leading to a hard infiltration extending half way to the umbilicus; 15 days later, the condition of the patient being desperate, he made an incision from the pubes to the left iliac crest, and as aspiration failed, he, without opening the peritoneum, carried his incision down into the pelvis and reached a necrotic slough and a cavity containing pus (not fœtid); this was cleared out and disinfected, and with subsequent drainage the patient made a good recovery.

Dr. Bedford Fenwick showed a *Uterus with Multiple Submucous Fibroids,* removed from a woman of 54 years of age, seven years after the menopause. For four years she had suffered from irregular and sometimes profuse hæmorrhage, relieved, but recurring after the removal of a polypoid growth projecting from the cervix, again by that of a hard, almost calcareous, growth, and similarly on several subsequent occasions; the last mass taken away was like a piece of an orange. Lately the bleeding had become more profuse, the discharge more offensive, and she had rapidly lost flesh and strength. On admission to hospital a soft friable mass could be felt just inside the cervix, to the touch just like malignant disease. She had a temperature of 102° and a pulse of 110, and from the history a diagnosis of sloughing intra-uterine fibroid was made. The case exemplified the fallacy of supposing that fibroids do not grow after the menopause, and was interesting from the manner in which it suggested malignant disease. An earlier radical operation might have saved her much suffering, but she made a good recovery from the operation.

In the discussion, Mr. MAYO ROBSON said that he did not think that the calcareous degeneration of fibroid tumours could be explained by deficient circulation through a small pedicle; though generally superficial, it was not always so.—Dr. C. H. F. ROUTH and Dr. J. A. MANSELL MOULLIN related cases analogous to the one of cellulitis reported by Dr. Macnaughton-Jones.—Mr. BOWREMAN JESSETT deprecated the application of carbolic acid to the stump and the closure of the cervical canal in supra-vaginal hysterectomy, and agreed with Mr. Robson in preferring properly prepared catgut to silk and silkworm gut for closing the abdominal wound.—Dr. RICHARD SMITH, Dr. HERBERT SNOW, Dr. J. OLIVER, Mr. T. RUSHBROOKE, Mr. SKENE KEITH and Dr. F. A. PURCELL also spoke; and the PRESIDENT and Dr. MACNAUGHTON-JONES shortly replied.

REVIEWS OF RECENT BOOKS.

TUMOURS, INNOCENT AND MALIGNANT: THEIR CLINICAL CHARACTERS AND APPROPRIATE TREATMENT. J. Bland-Sutton, Surgeon to the Chelsea Hospital for Women; Assistant Surgeon to the Middlesex Hospital, London. Third edition; with 312 engravings. London: Cassell and Co., 1903.

The present edition of Mr. Bland-Sutton's well-known work on Tumours will be of interest to readers of this JOURNAL, chiefly in the sections dealing with the new growths of the uterus and its appendages. The special interest which the author takes in the surgical and pathological aspects of these conditions is well known, and his views deserve careful consideration.

With regard to fibroids, the author's description of their topography and general characters follows conventional lines. His suggestion that these growths arise in intimate relation with the walls of arteries, a relation similar to that borne by neuromata to nerves, is very interesting, and appears to be one which it should not be difficult to put to the proof by microscopic investigation. Perhaps in a future edition the author will be in possession of actual proof of this interesting theory. The short chapter on the "Modes in which Fibroids imperil life" is very suggestive, but we think that Mr. Bland-Sutton entertains an exaggerated view of the dangers attending pregnancy with fibroids. He says (p. 199): "When a woman with a uterine fibroid conceives it is certain that her life is in jeopardy, not only so long as the fœtus remains within it, but also when it is expelled, whether this occur prematurely or at the full time." This sentence, besides being somewhat confused, expresses a view which, we are confident, would not be held by men familiar with the practice of midwifery; on the contrary, their opinion would be that very many women with fibroids pass through a normal pregnancy, labour and puerperium without any unusual risk. The statement on the same page that "fibroids have been far more lethal (than ovarian tumours) as they so frequently destroy puerperal women from sepsis," would, we suspect, be very difficult to prove, and contains the sufficiently obvious fallacy that in such cases the sepsis, and not the fibroid, is the lethal agent. The occurrence of such fatalities is undoubtedly a demonstration of the need for more careful midwifery, but is no proof of the lethal influence of fibroids.

With regard to the degenerations of fibroid tumours, we note that the author does not describe the condition of *necrobiosis*, upon which a number of observations have recently been made, including an important communication in this JOURNAL by Dr. Fairbairn. Of cystic (myxomatous) degeneration, he says that fibroids which have undergone this change are locally malignant, and tend to recur if enucleated; an interesting case is cited in support of this view.

The chapters dealing with cancer of the cervix and body of the uterus are very interesting, and well illustrated. Eight different ways in which cancer of the uterus may terminate fatally are mentioned. The relation of cancer of the uterus to pregnancy is briefly discussed and the frequent association of the disease with fibroids pointed out.

Adenoma and carcinoma of the Fallopian tube, although such rare

conditions, are well illustrated from the author's own experience, and a very interesting drawing showing direct extension of uterine cancer to the tube is also given. Primary cancer of the ovary, on the other hand, the author considers to still require "careful consideration with a full supply of material." He points out that cases occurring in children are suspect, and that the structure of carcinoma may be imitated by the persistence of Graafian follicles in sarcomatous tissue.

Dermoid tumours, in all the situations in which they occur, receive very full consideration, and the series of figures with which they are illustrated is probably unequalled. With regard to "Deciduoma Malignum," the author appears to be still unconvinced that this growth arises from chorionic tissues, and in his chapter on Teratomata the recent additions of Schlagenhaufer to this interesting group are not mentioned, nor their relation to the theoretical considerations which underlie the modern theory of "deciduoma malignum."

But on the whole Mr. Bland-Sutton has brought his work well abreast of established opinion, and we have no doubt it will continue to attract readers both by the lightness of the author's style and by the scientific value of his descriptions.

VAGINALE UND ABDOMINALE OPERATIONEN, KLINISCHER BEITRAG ZUR MODERNEN GYNÆKOLOGIE. Von Karl Abel. Berlin: August Hirschwald, 1903.

The title-page of this monograph of 177 pages does not fully indicate its exact scope and purpose, for its chief aim is the advocacy of a wider adoption of vaginal cœliotomy in pelvic surgery. It is based on a comparison of the results obtained by the author in a series of operations carried out by the abdominal and vaginal routes for such conditions as new growths and inflammatory affections of the adnexa, tubal pregnancy, displacements of the uterus and myoma. Hysterectomy for uterine cancer is not included on the ground that the writer has not himself had experience enough of the abdominal radical operation to be able to speak authoritatively of it, nor has sufficient time elapsed for its results to be properly observed, so that it is impossible for him to contrast the respective merits of the two routes in the surgical treatment of this disease. Exhaustive tabular statements of operations, followed by a discussion and review of the results obtained, occupy the greater part of the book. These, however, do not lend themselves readily to critical comment, and we propose to confine ourselves to an examination of the case made out for vaginal cœliotomy after a study of the results here recorded.

The anterior colpo-cœliotomy, as described by Dührssen, is the operation adopted exclusively by the author in his vaginal work. He considers it much better than the posterior, as by anteverting the uterus and bringing it outside the vulva, a thorough examination is possible, not only of the uterus itself, but also of the adnexa, and, further, everything is in sight just as much as in a laparotomy, while the correction of misplacements is rendered very easy. The objections which have been urged against the operation have been brought forward by those who have not fully mastered the technique, and have not had sufficient experience to form a judgment—as, for instance, Fehling, who condemned it after seven operations. In over 150 vaginal operations the author has always

been able to carry out his intentions, and has never found it necessary to fall back on laparotomy to complete the operation. Apart from the myoma cases, which are considered separately, 121 abdominal cœliotomies with eight deaths, or a mortality of 6·6 per cent., are recorded, and a similar number of vaginal cœliotomies with two deaths, or a mortality of 1·6 per cent. Besides the lessened mortality, the vaginal operation offers other advantages in the absence of an abdominal scar with the consequent risk of hernia, in the more rapid convalescence, and in the much greater freedom from troublesome after effects. Also patients dread the vaginal operation far less than the abdominal, and more willingly submit to it, so that it frequently happens that surgical measures are adopted at an earlier and more favourable time than if there is no alternative but laparotomy. The results of the myoma operations do not work out as favourably as the others. Out of 17 abdominal operations there were five fatal cases, and out of 23 vaginal total extirpations three ended fatally. In some of the vaginal operations large tumours reaching to the umbilicus were removed, necessitating extensive morcellement, and in two of these the bladder was injured.

Unfortunately the author has not given any explanation of the method of selection of cases for the vaginal operation, and anyone going to this book for help in this direction is doomed to disappointment. His thesis is, that with a few exceptions, all operations on the female pelvic organs ought to be carried out from below. These few exceptions are very large tumours, solid ovarian growths, and especially carcinomatous growths, while adhesions, torsion of the pedicle and intraligamentary growth offer no obstacle to the adoption of this route. The remarks on a case recorded in Table I. (No. 45, p. 32) are worth quoting as an illustration of the writer's attitude of mind. The case was one of a very large ovarian cyst, which so filled up the abdomen as to leave only a small resonant area under the ribs on the left side. This tumour was removed through an abdominal incision extending up to the umbilicus, and after the separation of very extensive adhesions to peritoneum, bowel and liver. Remarking on this case, he says: "An attempt to remove the tumour by the vagina was at once abandoned as the tissues of the cervix were so friable that the forceps tore out on the slightest traction being made." That any thought of operating on such a case by the vagina crossed the mind of the operator is enough to show that his anxiety to adopt that route leads him to attempt it in cases where few would care to follow him. The separation of adhesions to the liver through an anterior colpotomy incision would surely have been too great a tax on the skill of even as experienced a vaginal surgeon as Abel himself, and probably, when he realized the state of affairs in the abdomen, he felt relieved that the friability of the cervix had prevented any attempt at removal from below. We would, however, draw attention to the excellent results which Abel has obtained, and advise all who wish to learn what can be done by vaginal surgery to study his careful and painstaking record. These results show that much more can, and ought to be, done in this way than is the case at present. We regret, however, that the author has not stated his case with a little more moderation, and we are convinced that he would have advanced the cause he advocates much better had he included a chapter on the selection of cases for the vaginal operation instead of urging its adoption so widely. There is now a fairly general agreement that the vaginal route is to be preferred when the operation can be carried out without too many difficulties in manipulation and too much

risk of injury to the contents of the pelvis and abdomen. The problem rather is, what cases are best suited to attack from below? As this question becomes more settled the vaginal operation will come into more general use. The author of this monograph has done something to help towards a solution of this problem, but not as much as we had hoped.

PUBLICATIONS RECEIVED.

THE Editor begs to acknowledge the receipt of the following publications:

"Transactions of the Section on Gynecology of the College of Physicians of Philadelphia." *London: Wesley and Son.*
"Vaginale and Abdominale Operationen." Von Karl Abel. *Berlin: Hirschwald.*
"Tumours Innocent and Malignant." Bland-Sutton. *London: Cassell and Co.*
"Tumeurs du Placenta et Tumeurs Placentaires." Briquel. *Paris: Naud.*
"A Short Practice of Midwifery." Jellett. *London: Churchill.*
"Diseases of Women." Galabin. *London: Churchill.*
"Handbuch der Geburtshülfe." Ausgegeben von F. von Winckel. *Wiesbaden: Bergmann.*
"Lehrbuch der Gynäkologie." Max Runge. *Berlin: Sprengel.*
"Estratto dal Monitore Zoologico Italiano." "Estratto dal Rendiconti della Soc. Tosc. di Ostet. e Ginecol." Prof. Pasquale Sfameni.
"Adeno-Myoma des Uterus." Thomas S. Cullen. *Berlin: Hirschwald.*